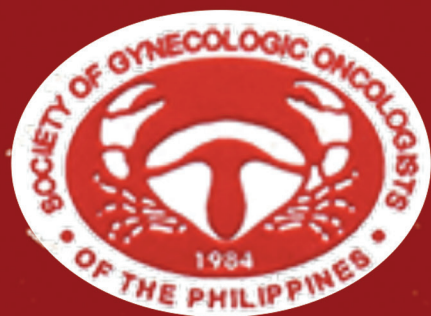




The Philippine Journal of GYNECOLOGIC ONCOLOGY

Official Publication of the Society of Gynecologic Oncologists of the Philippines

Volume 18 Number 2

December 2023

ORIGINAL PAPERS

Knowledge, attitude and practices among obstetricians and gynecologists in selected hospitals within Metro Manila on opportunistic bilateral salpingectomy during benign gynecologic surgery and as a method of sterilization

Impact of the COVID-19 on cancer care access and delivery from the perspective of gynecologic cancer patients: A cross-sectional survey

Mental health and well-being of fellows and residents handling cancer patients in the corona virus pandemic

CASE REPORTS

Extrarenal Wilms tumor of the uterus: A case report

A rare case of primary high grade endometrial stromal sarcoma of the ovary: Challenges in diagnosis and treatment

Double primary malignancy of the cervix and appendix – the rare co-passe



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Knowledge, attitude and practices among obstetricians and gynecologist in selected hospitals within Metro Manila on opportunistic bilateral salpingectomy during benign gynecologic surgery and as a method of sterilization

Reya Andrea H. Hurtado, MD and Maria Lilibeth L. Sia Su, MD, FPOGS, FSGOP, FPSCPC

ABSTRACT

Background: Recent evidence that fallopian tubes are plausible origin of serous epithelial ovarian cancer initiated the practice of doing opportunistic salpingectomy as a risk reducing strategy for ovarian cancers.

Objective: To determine the current knowledge, attitude and practices of residents-in-training, fellows-in-training and consultants of Obstetrics and Gynecology within Metro Manila in performing opportunistic salpingectomy.

Methodology: This is a cross-sectional study that used a validated self-administered questionnaire sent through electronic mails using google forms.

Results: There is an overall support in considering opportunistic salpingectomy during benign gynecologic procedure and as a sterilization method. Decrease risk of ovarian, fallopian tube and/or peritoneal cancers was the major consideration in performing bilateral salpingectomy. Factors that deterred practice were increased in operative time and unfamiliarity of the procedure.

Conclusion: Strengthening awareness on opportunistic salpingectomy from present literature and issuance of a local practice guideline may increase the rate of performance of bilateral total salpingectomy as a risk reducing strategy for ovarian cancers.

Keywords: *opportunistic salpingectomy, risk reducing strategy, ovarian cancer, serous tubal intraepithelial carcinoma, practice patterns*

INTRODUCTION

Ovarian cancer is the fifth leading cancer of gynecological neoplasms and has the highest mortality rate in the United States. In the Philippines, it ranks as 12th among all cancers, and 5th for cancers afflicting Filipino women.¹

Ovarian carcinomas are diagnosed at advanced stages due to the lack of effective screening tests in detecting early stages or pre-invasive disease. Serum CA125 and pelvic ultrasound have been evaluated as potential strategies for early detection of ovarian carcinoma, but there is still no effective screening test as of the present time.¹ There has been little improvement in the over-all survival over the recent decades despite the advances in treatment, particularly with the new chemotherapeutic agents available.²

Serous epithelial ovarian cancer is the most common histological subtype of ovarian carcinoma. Recent evidence suggests that serous epithelial ovarian carcinoma are derived from the fallopian tube. Histological examination of fallopian tube

specimens obtained either during prophylactic surgery in high-risk women and during resection of serous ovarian/peritoneal cancer has demonstrated a significant proportion of occult malignancy and intraepithelial carcinoma originating from the fallopian tube. A strong association between the presence of serous tubal intraepithelial carcinoma and the development of high grade serous pelvic tumors has been reported in numerous studies.^{3,4,6}

Ovarian cancer rates were demonstrated to be lower among women who have undergone tubal ligation.^{1,4,5,6} A recent population-based cohort study demonstrated that bilateral salpingectomy achieves greater ovarian cancer risk reduction than tubal ligation alone.^{1,4} A local study done in a tertiary hospital in the Philippines looked into the association of epithelial ovarian carcinoma with tubal ligation and salpingectomy and concluded that tubal ligation and salpingectomy reduces the risk of developing ovarian carcinoma.⁵

The current practice of Filipino gynecologist on opportunistic bilateral salpingectomy is unclear and has not been determined. This study primarily aims to determine the current knowledge of obstetricians and gynecologists on ovarian cancer risk and opportunistic salpingectomy. It likewise aims to identify the current practice and factors influencing the performance of opportunistic salpingectomy and assess the attitude of the obstetricians and gynecologists in performing opportunistic salpingectomy during benign gynecologic procedure and as a permanent method of sterilization. The results of this study are vital as it helps identify the gaps and barriers in performing opportunistic salpingectomy. The results can also strengthen strategies in improving the practice of opportunistic salpingectomy as an effort in preventing ovarian carcinoma.

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REVIEW OF RELATED LITERATURE

Recent evidences have shown the role of bilateral salpingectomy in the prevention of ovarian cancer. A study done by Lessard-Anderson et al.⁶ found that excisional tubal sterilization alone decreased the risk of epithelial ovarian cancer and primary peritoneal cancer by 63%. A study by Falconer et al.⁴, showed a 50% reduction in the risk of ovarian cancer for those women who had bilateral salpingectomy during hysterectomy. Another study by Kwon et al.⁷ focused on the risk of ovarian cancer who underwent hysterectomy alone, who had hysterectomy with salpingectomy and who had hysterectomy with bilateral salpingo-oophorectomy and results showed a 38.1% reduction in the risk of ovarian cancer in women who underwent hysterectomy with salpingectomy compared to hysterectomy alone. Hysterectomy with bilateral salpingo-oophorectomy showed an 88.1% decreased risk of having ovarian cancer. The same study also compared sterilization methods and showed a 29.2% reduction in ovarian cancer when salpingectomy was used as the sterilization method compared with tubal ligation.⁷ Vorwergh et al.⁸ noted postoperative occurrence of adnexal pathologies among women who did not undergo prophylactic bilateral salpingectomy during benign surgery versus those who had the bilateral salpingectomy. The adnexal pathologies were namely ovarian cyst, adnexitis, hydrosalpinx and pyosalpinx.⁹ The studies (Cibula et al. and Rice et al.) reported the risk reduction of ovarian carcinoma with tubal ligation and showed an overall HR= 0.69(95% CI=0.64). They also noted no differences in terms of estimated blood loss, duration of surgery, and complications among those who had salpingectomy.^{10,11}

Morelli et al. reported no statistical significance in the anti-Mullerian hormone, follicle-stimulating hormone, antral follicle counts and mean ovarian diameters among those who underwent hysterectomy and hysterectomy with bilateral salpingectomy.¹² Dar et al. evaluated the ovarian function before and after salpingectomy through an artificial reproductive technology and showed no significant change in the human menopausal gonadotropin used in the cycles, pre-ovulatory concentration of estrogen, number of oocytes received and quality of embryo. The implantation rate in patients who underwent in vitro fertilization was 23.07% and pregnancy rate was 19.23% after salpingectomy.¹³

Recent evidence showed a reduction of occurrence of ovarian carcinoma with opportunistic salpingectomy, however there is controversy among obstetricians on its routine performance during benign gynecologic procedure and as a permanent method of sterilization. Varied physician's perception influenced the performance of opportunistic salpingectomy. In 2013, Gill et al., reported 54.3% of 254 physicians performed bilateral salpingectomy during hysterectomy with the most common indication was to reduce the risks of cancer (75%). Other indications mentioned were to decrease repeat operation (49.1%), to avoid risk of developing hydrosalpinx (48.3%) and to decrease the risk of pelvic pain (30.2%). Surgeons who did not perform salpingectomy believed there was no benefit in terms of decreasing the risk of ovarian cancer. Forty percent (40%) of the respondents believed that it increases both the operative time and intraoperative complications.¹⁴ Another survey done in Canada showed 55% of the physicians did not perform bilateral salpingectomy believing there was no benefit in doing the procedure, 30% thought it increased surgical morbidity, and 8% regarded it increased surgical complexity.¹⁵ A survey done in Italy showed that most physicians who performed bilateral salpingectomy during benign gynecologic

procedure had the intention of reducing ovarian and peritoneal cancers.¹⁶ Their result also showed that 65% of the physicians are aware of the literature and safety data published, while 21% knew the literature but were not aware of the safety data published.¹⁶

Increased rate of practice of bilateral salpingectomy has been shown in the recent years in the United States as reported by a study done by Garcia et al., the rate of salpingectomy in the United States increased from 14.7% to 72.7%. Results showed that according to the clinicians' view, 54% had no difficulty in performing bilateral salpingectomy. While 36% reported difficulty in accessing the fallopian tube. Three percent (3%) of clinicians believed doing bilateral salpingectomy increased complications, decreased the ovarian reserve, increased the operating room time, and increased the counselling time.¹⁷

METHODOLOGY

This is a descriptive cross-sectional study that determined the knowledge, attitude and practices on opportunistic salpingectomy for benign gynecologic surgery and as a means of permanent sterilization among residents-in-training, fellows-in-training and consultants of Obstetrics-Gynecology in different hospitals in Metro Manila. The study population included board certified physicians currently undergoing obstetrics and gynecology residency training, fellowship training and consultants of different subspecialty in Obstetrics and Gynecology practicing in different hospitals within Metro Manila. Data was collected through a self-administered questionnaire sent through electronic mail. An introductory email with the study description was sent out to the different hospitals in Metro Manila. This was addressed to the chairman of the Department of Obstetrics and Gynecology of the different hospitals, and all residents-in-training, fellows-in-training and consultants in the hospital were asked to participate in the study. The self-administered questionnaire and consent form were made available via Google forms. Responses were recorded, and data was coded using the Microsoft Excel spreadsheet.

The questionnaire used was adapted from the surveillance study conducted by Nathaniel Jones et al.¹⁸ in the United States of America. The questionnaire was modified and was tested for face validity and comprehensibility through the expert panels from the field of Gynecologic-Oncology at a government tertiary hospital in Metro Manila.

The questionnaire consisted of four parts: 1) items regarding the respondents' demographics, 2) knowledge on ovarian cancer risk and opportunistic salpingectomy, 3) attitude towards opportunistic salpingectomy, and 4) opportunistic salpingectomy practices.

Frequencies and percentages were used to summarize the profile of the participants in the study and the distribution of responses in the knowledge, attitude, and practices of opportunistic salpingectomy. Chi-square test was used to determine which knowledge and perceptions on opportunistic salpingectomy were associated with practice. SPSS 23 was used for data analysis and the level of significance was set at a P=0.05.

RESULTS AND DISCUSSION

A total of 140 respondents participated in the study, 96.4% of the participants were females with a mean (SD) age of 38.7 years old (SD=9.3). The age range from 27 to 65 years. Fifty-four percent (54%) of the respondents were from private institutions,

while 46% were from government institutions. The respondents were composed of 86 consultants (61%), 33 residents-in-training (24%) and 21 fellows-in-training (15%). The residents-in-training had the greatest number of hysterectomies done per year (10-50), followed by fellows-in-training with 11-20 hysterectomies per year and consultants having 1-10 hysterectomies per year. In terms of permanent sterilizations performed per year, 95% of fellows-in-training had 11-20 interval sterilizations per year, 48% of residents-in-training and 75% of consultants had 1-10 interval sterilizations per year. There were 1-10 post-partum sterilizations were performed by residents-in-training (48.5%), fellows-in-training (80.9%) and consultants (70.9%) per year. One to ten (1-10) sterilizations during cesarean section were performed by 42% of residents-in-training, 38% of fellows-in-training, and 82% consultants. (Table 1.)

Table 1. Characteristics of the Study Population

Respondents' profiles	N=140	
Age, years		
mean[sd]	38.7	9.3
Gender		
M	5	3.6
F	135	96.4
Institution		
Private	75	53.6
Government	65	46.4
Residency year level	33	23.6
1	1	3.0
2	10	30.3
3	12	36.4
4	11	33.3
Fellow training year level	21	15.0
1	16	76.2
2	5	23.8
3	0	0.0
4	0	0.0
Consultants Years since completion of training	86	61.4
0-5	39	45.3
6-10	20	23.3
11-20	14	16.3
21-30	10	11.6
>30	3	3.5
Number of hysterectomies performed per year by Residents		
None	20	60.6
1-10	3	9.1
11-20	4	12.1
21-30	2	6.1
31-40	0	0.0
41-50	4	12.1
Number of interval sterilizations performed per year by Residents		
None	14	42.4
1-10	16	48.5
11-20	1	3.0
21-30	1	3.0
31-40	1	3.0
41-50	1	3.0
Number of post-partum sterilizations performed per year by Residents		
None	5	15.1
1-10	16	48.5
11-20	6	18.2
21-30	2	6.1
31-40	1	3.0
41-50	3	9.1
Number of sterilizations during cesarean section performed per year by Residents		
None	2	6.1
1-10	14	42.4
11-20	12	36.4
21-30	2	6.1
31-40	0	0
41-50	3	9.1
Number of hysterectomies done per year done by Fellow's		
None	1	4.8
1-10	15	71.4
11-20	2	9.5
21-30	3	14.3
31-40	0	0.0
41-50	0	0.0

Number of interval sterilizations performed per year by Fellows		
None	1	4.8
1-10	20	95.2
11-20	0	0.0
21-30	0	0.0
31-40	0	0.0
41-50	0	0.0
Number of post-partum sterilizations performed per year by Fellows		
None	1	4.8
1-10	17	80.9
11-20	2	9.5
21-30	1	4.8
31-40	0	0.0
41-50	0	0.0
Number of sterilizations during cesarean section performed per year by Fellows		
None	1	4.8
1-10	8	38.1
11-20	10	36.4
21-30	2	
31-40	0	0
41-50	0	0
Number of hysterectomies done per year done by Consultant		
None	1	1.2
1-10	64	75.3
11-20	14	16.5
21-30	2	2.4
31-40	1	1.2
41-50	3	3.5
Number of interval sterilizations performed per year by Consultant		
None	30	34.9
1-10	53	61.6
11-20	3	3.5
21-30	0	0.0
31-40	0	0.0
41-50	0	0.0
Number of post-partum sterilizations performed per year by Consultant		
None	16	18.6
1-10	61	70.9
11-20	5	5.8
21-30	3	3.5
31-40	1	1.2
41-50	0	0.0
Number of sterilizations during cesarean section performed per year by Consultants		
None	7	8.1
1-10	71	82.5
11-20	2	2.3
21-30	4	4.6
31-40	0	0
41-50	2	2.3

General knowledge

The distribution of responses from participants is presented in Table 2. The responses on questions on knowledge were as follows; Ninety percent (90%) of residents-in-training, fellows-in-training and consultants answered that ovarian cancer arises from high grade intraepithelial serous carcinoma in the fallopian tube. Seventy percent (70%) of residents-in-training, fellows-in-training, and consultants answered that ovarian cancer has a genetic predisposition which resulted in a defective DNA repair. Fifty to eighty percent (50-80%) answered that ovarian cancer it also arises from the ovarian surface epithelium invagination and from an inflammation brought about by endometriosis. Thirty percent (30%) answered that ovarian cancer arises from an elevated gonadotropin promoting the malignant changes.

Knowledge on ovarian cancer risks were as follows; 80-90% knew that the lifetime risk of ovarian cancer in the general population is 1.3%. Twenty to forty percent (20-40%) of the respondents answered that approximately 20% of ovarian cancers are inherited. Eighty to ninety percent (80-90%) of residents-in-training, fellows-in-training and consultants had no knowledge on the 81- 90% risk reduction of ovarian cancer when risk-reducing oophorectomy is done for BRCA mutation carriers.

Knowledge on opportunistic salpingectomy was varied

Table 2. Knowledge of residents-in-training, fellows-in-training and consultants in Metro Manila regarding ovarian cancer risk and opportunistic salpingectomy.

Knowledge	Residents-in-training (n=33)	Fellows-in-training (n=21)	Consultants (n=86)
Ovarian cancer is thought to arise from?			
Genetic predisposition that results in defective DNA repair mechanisms	26 (78.8)	16 (76.2)	68 (79.1)
High grade intraepithelial serous carcinoma in the fallopian tube which then spread to the ovary	31 (93.9)	19 (90.5)	80 (93.0)
Ovarian surface epithelium which invaginate and leads to inclusion cysts that eventually undergo malignant transformation	27 (81.8)	12 (57.1)	62 (72.1)
Inflammatory genes induced by endometriosis	18 (54.5)	15 (71.4)	55 (63.9)
Elevated gonadotropins inducing malignant changes	13 (39.4)	8 (38.1)	32 (37.2)
None of the above	0	0	1 (1.2)
The lifetime risk of ovarian cancer in the general population is 1.3%?			
True (n,%)	28 (84.5)	18 (85.7)	79 (91.9)
False(n,%)	5 (15.2)	3 (14.3)	7 (8.1)
Approximately what percent of epithelial ovarian cancers are inherited?			
10 % (n,%)	10(30.3)	10(47.6)	36(41.9)
15(45.4)		6(28.6)	24(27.9)
20% (n,%)	6(18.2)	3(14.3)	13(15.1)
30% (n,%)	2(6.1)	2(9.5)	13(15.1)
40% (n,%)			
Risk-reducing oophorectomy reduces the risk of ovarian cancer in BRCA mutation carriers by?			
60-70% (n,%)	13(39.4)	8(38.1)	37(43)
71-80% (n,%)	14(42.2)	8(38.1)	30(34.9)
81-90% (n,%)	6(18.2)	2 (9.5)	16 (18.6)
91-100% (n,%)	0(0)	3(14.3)	3(3.4)
Is prophylactic salpingectomy the same as opportunistic salpingectomy?			
True (n,%)	25 (75.8)	11 (52.4)	54 (62.8)
False (n,%)	8 (24.2)	10 (47.6)	32 (37.2)
Is there a role for opportunistic salpingectomy outside the BRCA population?			
Yes (n,%)	24 (72.7)	17 (80.9)	51 (59.3)
No (n,%)	6 (21.2)	0(0)	8 (9.3)
Maybe (n,%)	3(9.1)	4 (19.1)	27(31.4)

among the respondents. Seventy-six percent (76%) of residents-in-training, 63% of consultants, and 52% of fellows-in-training answered that prophylactic salpingectomy is the same as opportunistic salpingectomy. Seventy to eighty (70-80%) of residents-in-training, fellows-in-training, and 50% of consultants knew of the role of opportunistic salpingectomy outside the BRCA population.

Knowledge on opportunistic salpingectomy among residents-in-training, fellows-in-training and consultants are shown in Table 3. Ninety to one hundred percent (90-100%) of residents-in-training, fellows-in-training and consultants agreed/strongly agreed that performing opportunistic salpingectomy, during benign gynecologic procedure and sterilization method, decreases the risk of ovarian, fallopian tube, and/or peritoneal cancer. Sixty to ninety percent (60-90%) of the respondents also agreed/strongly agreed that bilateral salpingectomy decreases formation of

Table 3. Knowledge on opportunistic salpingectomy by residents-in-training, fellows-in-training and consultants

Knowledge on Opportunistic Salpingectomy	Residents-in-training (n=33)	Fellows-in-training (n=21)	Consultants (n=86)
Would decrease the risk of ovarian, fallopian tube, and/or peritoneal cancer (n,%)			
Strongly Agree	10 (30.3)	13 (61.9)	26 (29.1)
Agree	23 (69.7)	7 (33.3)	56 (65.1)
Neutral	0 (0.0)	1 (4.8)	3 (3.5)
Disagree	0 (0.0)	0 (0.0)	2 (2.3)
Strongly Disagree	0 (0.0)	0 (0.0)	0 (0.0)
Would decrease the risk of pelvic pain (n,%)			
Strongly Agree	0 (0.0)	5 (23.8)	8 (9.3)
Agree	8 (24.2)	2 (9.5)	25 (29.1)
Neutral	17 (51.5)	9 (42.9)	34 (39.5)
Disagree	7 (21.2)	5 (23.8)	15 (17.4)
Strongly Disagree	1 (3.0)	0 (0.0)	4 (4.6)
Would decrease the risk of formation of hydrosalpinges (n,%)			
Strongly Agree	9 (27.3)	11 (52.4)	34 (39.5)
Agree	17 (51.5)	9 (42.9)	46 (53.5)
Neutral	3 (9.1)	1 (4.8)	4 (4.7)
Disagree	4 (2.1)	0 (0.0)	2 (2.3)
Strongly Disagree	0 (0.0)	0 (0.0)	0 (0.0)
Would decrease the risk of reoperation (n,%)			
Strongly Agree	3 (9.1)	8 (38.1)	12 (13.9)
Agree	19 (57.6)	9 (42.9)	59 (68.6)
Neutral	8 (24.2)	3 (14.3)	11 (12.8)
Disagree	2 (6.1)	1 (4.8)	2 (2.3)
Strongly Disagree	1 (3.0)	0 (0.0)	2 (2.3)
Would increase the operative time (n,%)			
Strongly Agree	8 (38.1)	4 (19.1)	12 (13.9)
Agree	9 (42.9)	6 (28.6)	59 (68.6)
Neutral	3 (14.3)	6 (28.6)	11 (12.8)
Disagree	1 (4.8)	4 (19.1)	2 (2.3)
Strongly Disagree	0 (0.0)	1 (4.8)	2 (2.3)
Would increase the risk of ovarian failure (n,%)			
Strongly Agree	0 (0.0)	1 (4.8)	2 (2.3)
Agree	12 (36.4)	7 (33.3)	23 (26.7)
Neutral	7 (21.2)	6 (28.6)	22 (25.6)
Disagree	13 (39.4)	6 (28.6)	31 (36.1)
Strongly Disagree	1 (3.0)	1 (4.8)	8 (9.3)
Would increase risk of operative complications (n,%)			
Strongly Agree	0 (0.0)	0 (0.0)	1 (1.2)
Agree	11 (33.3)	4 (19.1)	25 (29.1)
Neutral	5 (15.2)	3 (14.3)	15 (17.4)
Disagree	17 (51.5)	13 (61.9)	41 (47.7)
Strongly Disagree	0 (0.0)	1 (4.8)	4 (4.6)

hydrosalpinges and risk of reoperation. Eighty (80%) of residents-in-training and consultants agreed/strongly agreed that performing bilateral salpingectomy during benign gynecologic procedure and as a sterilization method would increase the total operative time. Eighty to ninety percent (80-90%) of residents-in-training, consultants, and 50% of fellows-in-training disagreed/strongly disagreed that bilateral salpingectomy can increase operative complications. Thirty percent (30%) of the respondents agreed/strongly agreed that bilateral salpingectomy can increase the risk of ovarian failure. Perceptions on opportunistic salpingectomy are shown in Table 4. Eighty to ninety percent (80-90%) disagreed/strongly disagreed that bilateral salpingectomy is not as effective as other sterilization methods. Lastly, 70-90% of the respondents consider that performing opportunistic salpingectomy has more benefits which outweigh its risks.

Table 4. Perceptions on opportunistic salpingectomy by residents-in-training, fellows-in-training and consultants.

Perceptions on Opportunistic Salpingectomy	Residents-in-training (n=33)	Fellows-in-training (n=21)	Consultants (n=86)
Is not as effective as other sterilization methods			
Strongly Agree	0 (0.0)	0 (0.0)	1 (1.2)
Agree	3 (9.1)	1 (4.8)	10 (11.6)
Neutral	1 (3.0)	0 (0.0)	2 (2.3)
Disagree	23 (69.7)	10 (47.6)	41 (47.7)
Strongly Disagree	6 (18.2)	10 (47.6)	32 (37.2)
Has benefits that outweigh the risks (n,%)			
Strongly Agree	2 (6.1)	7 (33.3)	18 (20.9)
Agree	25 (75.8)	9 (42.9)	62 (72.1)
Neutral	5 (15.2)	5 (23.8)	4 (4.6)
Disagree	1 (3.0)	0 (0.0)	2 (2.3)
Strongly Disagree	0 (0.0)	0 (0.0)	0 (0.0)
Has risks outweigh the benefits (n,%)			
Strongly Agree	0 (0.0)	1 (4.8)	1 (1.2)
Agree	11 (33.3)	3 (14.3)	26 (30.2)
Neutral	5 (15.2)	5 (23.8)	9 (10.5)
Disagree	15 (45.5)	9 (42.9)	44 (51.2)
Strongly Disagree	2 (6.1)	3 (14.3)	6 (7.0)

Attitude regarding Opportunistic Salpingectomy

Eighty to ninety percent (80-90%) of residents-in-training, fellows-in-training- and consultants would consider performing bilateral salpingectomy during benign gynecologic procedure. Sixty to eighty percent (60-80%) of them would consider performing bilateral salpingectomy during interval, post-partum sterilization and during cesarean section as shown in Table 5.

Table 5. Attitude of residents-in-training, fellows-in-training, and consultants when considering whether to perform opportunistic salpingectomy

Attitude	Residents-in-training (n=33)	Fellows-in-training (n=21)	Consultants (n=86)
Do you consider performance of bilateral salpingectomy during benign gynecologic procedure?			
No (n,%)	3 (9.1)	0 (0.0)	15 (17.4)
Yes (n,%)	30 (90.9)	21 (100.0)	71 (82.6)
Do you consider performance of bilateral salpingectomy during interval sterilization?			
No (n,%)	8 (24.2)	6 (28.6)	26 (30.2)
Yes (n,%)	25 (75.8)	15 (71.4)	60 (69.8)
Do you consider performance of bilateral salpingectomy during post partum sterilization?			
No (n,%)	7 (21.2)	8 (38.1)	33 (38.4)
Yes (n,%)	26 (78.8)	14 (61.9)	53 (61.6)
Do you consider performance of bilateral salpingectomy during cesarean section?			
No (n,%)	6 (18.2)	4 (19.1)	28 (32.6)
Yes (n,%)	27 (81.8)	17 (80.9)	58 (67.4)

The number of residents, fellows and consultants who will advise opportunistic salpingectomy to their patients is presented in Table 6. For benign gynecologic procedure, about 80-100% residents-in-training, fellows-in-training, and consultants indicated that they would advise performance of bilateral salpingectomy. Eighty to ninety percent (80-90%) of residents-in-training, fellows-in-training and consultants will advise performing bilateral

salpingectomy as a permanent sterilization method during cesarean section. However, only 60-70% will advise performing bilateral salpingectomy for interval and post-partum sterilization procedure. Eighty to ninety (80-90%) of residents-in-training, fellows-in-training, and consultants will recommend performing bilateral salpingectomy to identified high-risk group or BRCA carriers (Table 7).

Seventy percent (70%) would recommend bilateral partial salpingectomy (Parkland, Pomeroy) as a method of sterilization and 55.7% will advise doing bilateral total salpingectomy (Table 7). The primary reason for choice of sterilization procedure was the respondents' familiarity with the procedure (90.0%) as shown in Table 9.

Table 6. Number of residents-in-training, fellows-in training and consultants who will advise or recommend opportunistic salpingectomy during benign gynecologic procedure and sterilization

Attitude	Residents-in-training (n=33)		Fellows-in-training (n=21)		Consultants (n=86)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Benign Gynecologic procedure	29	87.9	21	100	75	87.2
Post-partum sterilization	25	75.8	13	61.9	64	74.4
Interval sterilization	25	75.8	13	61.9	64	74.4
Sterilization during Cesarean Section	29	87.9	16	76.2	77	89.5

Table 7. Number of residents-in-training, fellows-in training and consultants who will advise or recommend opportunistic salpingectomy to high-risk group or BRCA carrier

	Frequency	Percent
Residents-in-training (n=33)	28	84.8
Fellows-in-training (n=21)	19	90.5
Consultants (n=86)	70	81.4

Table 8. Preferred methods of sterilization among the respondents

Methods	Frequency	Percent
No preference	0	0
Clips	7	5.0
Bipolar coagulation	10	7.1
Bilateral salpingectomy	78	55.7
Bilateral partial salpingectomy (Parkland, Pomeroy)	98	70.0

Table 9. Reasons for choice of sterilization procedure

Reason for choice of technique	Frequency	Percent
Less complications	61	43.6
Familiarity of procedure	126	90.0
Effectiveness of procedure	82	58.6

Practice patterns on Opportunistic Salpingectomy

The number of bilateral salpingectomies done for the last five years by the residents-in-training, fellows-in-training and consultants is presented in Table 10. Fifty percent (50%) of residents-in-training, fellows-in-training and consultants have indicated that they were able to perform 1-10 bilateral salpingectomy for benign gynecologic procedure. For permanent sterilization method, 30-50% of residents-in-training, fellows-in-training and consultants were able to do 1-10 bilateral salpingectomy during post-partum sterilization. Sixty to seventy percent (60-70%) of residents-in-training and fellows-in-training and 48.8% of the consultants were able to do 1-10 bilateral salpingectomies during cesarean section. Fifty to seventy percent (50-70%) of respondents did not do bilateral salpingectomy during interval sterilization.

Table 10. Bilateral salpingectomies by residents-in-training, fellows-in training and consultants during the last 5 years

Number of bilateral salpingectomies performed during benign gynecologic procedure	Residents-in-training (n=33)		Fellows-in-training (n=21)		Consultants (n=86)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
None	14	42.4	1	4.8	23	26.7
1-10	16	48.5	12	57.1	51	59.3
11-20	1	3.0	4	19.1	4	4.6
21-30	0	0.0	3	14.3	2	2.3
31-40	1	3.0	0	0.0	3	3.5
41-50	1	3.0	1	4.8	3	3.5
Number of bilateral salpingectomies performed during post-partum sterilization						
	Frequency	Percent	Frequency	Percent	Frequency	Percent
None	19	57.6	8	38.1	51	59.3
1-10	12	36.4	11	52.4	27	31.4
11-20	2	6.1	1	4.8	4	4.6
21-30	0	0.0	0	0.0	0	0.0
31-40	0	0.0	0	0.0	1	1.2
41-50	0	0.0	1	4.8	3	3.5
Number of bilateral salpingectomies performed during cesarean section						
	Frequency	Percent	Frequency	Percent	Frequency	Percent
None	9	27.3	3	14.3	36	41.9
1-10	22	66.7	15	71.4	42	48.8
11-20	1	3.0	1	4.8	4	4.6
21-30	1	3.0	1	4.8	0	0.0
31-40	0	0.0	0	0.0	2	2.3
41-50	0	0.0	1	4.8	2	2.3
Number of bilateral salpingectomies performed during interval sterilization						
	Frequency	Percent	Frequency	Percent	Frequency	Percent
None	25	75.8	11	52.4	67	77.9
1-10	8	24.2	8	38.1	14	16.3
11-20	0	0.0	0	0.0	4	4.6
21-30	0	0.0	1	4.8	0	0.0
31-40	0	0.0	0	0.0	1	1.2
41-50	0	0.0	11	52.4	0	0.0

Knowledge and perceptions on opportunistic salpingectomy were tested for association with performance during benign gynecologic procedure and as sterilization methods (interval, post-partum and during cesarean section) using Chi-square test (Table 11). Performing bilateral salpingectomy during benign gynecologic procedure and sterilization was significantly associated with decreasing the risk of ovarian, fallopian tube and peritoneal cancer ($p=0.034$; $p=0.00$). Decreasing the risk of pelvic pain and reoperation was significantly associated with performing bilateral

salpingectomy during post-partum sterilization ($p=0.025$; $p=0.085$). Increasing operative time when doing bilateral salpingectomy was significantly associated during benign gynecologic procedure ($p=0.004$), and interval sterilization ($p=0.018$). Increasing risk of ovarian failure was significantly associated with performance of bilateral salpingectomy during post-partum sterilization ($p=0.026$). Increasing operative complications was significantly associated with performance of bilateral salpingectomy during cesarean section ($p=0.004$).

The perception of opportunistic salpingectomy having benefits outweighing risks was significantly associated with its performance during interval ($p=0.000$) and post-partum sterilization ($p=0.000$).

DISCUSSION

The shift in the paradigm of tumorigenesis of ovarian cancer to tubal origin has revolutionized the practice of opportunistic salpingectomy. Several studies have already generated strong evidence of the role of bilateral salpingectomy during benign gynecologic procedure and as a method of sterilization to decrease the risk of developing ovarian cancer.^{1,2,3,4} Currently, bilateral salpingectomy as a risk reducing strategy have gained acceptance and increased its performance in some countries.^{2,3,4}

In this study, we were able to determine the current knowledge on ovarian cancer epidemiology and risks, knowledge and perceptions on opportunistic salpingectomy, attitude and the practice pattern of doing bilateral salpingectomy during benign gynecologic procedures and sterilization methods among residents-in-training, fellows-in-training and consultants. The survey also identified associated knowledge and perceptions when considering the performance of opportunistic salpingectomy.

Although knowledge on ovarian cancer epidemiology and opportunistic salpingectomy varied among residents, fellows and consultants, it is important to note that majority of the respondents recognized that the fallopian tubes is the possible origin of ovarian cancer. However, lack of knowledge on ovarian cancer epidemiology and the benefits of opportunistic salpingectomy were observed in this study. These are important aspects vital in counselling and when considering performing opportunistic salpingectomy. The ability to adequately discuss potential benefits and risk of doing bilateral salpingectomy on patients undergoing benign gynecologic procedure and permanent sterilization method relies heavily on the physicians' knowledge of ovarian cancer epidemiology and risks, as well as knowledge of benefits and risks of opportunistic salpingectomy. A study done in Netherlands by Steenbeek et.al. showed that one of the supportive factors in doing opportunistic salpingectomy is adequate knowledge on the current literature of opportunistic salpingectomy.²⁰

Overall, majority of the respondents considered doing opportunistic salpingectomy. In this study, the decreasing the risk of ovarian, fallopian tube and/or peritoneal cancer is a significant factor that favorably promotes performance of opportunistic salpingectomy. This was also true in several studies, in which 50-80% of the sampled clinicians practiced opportunistic salpingectomy to reduce risk of ovarian cancer.²⁰ Compared to previous studies, enumerated barriers such as the increased risk of ovarian failure and operative complications were not identified as limiting factors in performing opportunistic salpingectomy.²⁰ Benefits such as decreased formation of hydrosalpinx, decreased

Table 11. Association of knowledge and perceptions of opportunistic salpingectomy with performance during benign gynecologic procedure and as sterilization technique

Knowledge based on perceptions on Opportunistic Salpingectomy	Benign gynecologic procedure	p-value	Interval sterilization procedure	p-value	Post-partum sterilization procedure	p-value	During cesarean section	p-value
Decrease the risk of ovarian, fallopian tube, and/or peritoneal cancer (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	40 (38.8) 60 (58.2) 1 (1.0) 0 (0.0) 2 (1.9)	0.034	21 (56.8) 13 (35.1) 1 (2.7) 0 (0.0) 2 (5.4)	0.000	33 (53.2) 25 (40.3) 2 (3.2) 0 (0.0) 2 (3.2)	0.000	7 (18.9) 15 (40.5) 5 (13.5) 3 (8.1) 7 (19.9)	0.018 0
Decrease the risk of pelvic pain (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	11 (10.7) 0 (0.0) 44 (42.7) 4 (3.9) 21 (20.4)	0.744	5 (13.5) 10 (27.0) 15 (40.5) 1 (2.7) 6 (16.2)	0.838	9 (14.5) 19 (30.6) 21 (33.9) 0 (0.0) 13 (21.0)	0.025	17 (45.9) 15 (40.5) 3 (8.1) 0 (0.0) 2 (5.4)	.801
Decrease the risk of formation of hydrosalpinges (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	43 (41.7) 49 (47.6) 6 (5.8) 0 (0.0) 5 (4.8)	0.538	15 (40.5) 17 (45.9) 3 (8.1) 0 (0.0) 2 (5.4)	0.702	24 (38.7) 29 (46.8) 4 (6.5) 0 (0.0) 5 (8.1)	0.240	21 (20.4) 58 (56.3) 17 (16.5) 4 (3.9) 3 (2.9)	0.102
Decrease the risk of reoperation (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	21 (20.4) 58 (56.3) 17 (16.5) 3 (2.9) 4 (3.9)	0.121	11 (29.7) 21 (56.8) 4 (10.8) 0 (0.0) 1 (2.7)	0.131	16 (25.8) 33 (53.2) 10 (16.1) 1 (1.6) 2 (3.2)	0.085	2 (5.4) 7 (18.9) 8 (21.6) 4 (10.8) 16 (43.2)	0.171
Increase the operative time (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	10 (9.7) 45 (43.7) 11 (10.7) 5 (4.8) 21 (31.1)	0.004	7 (18.9) 15 (40.5) 5 (13.5) 3 (8.1) 7 (19.9)	0.018	7 (11.3) 31 (50.0) 6 (9.7) 3 (4.8) 15 (24.2)	0.499	43 (41.7) 49 (47.6) 6 (5.8) 0 (0.0) 5 (4.8)	0.538
Increase the risk of ovarian failure (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	3 (2.9) 27 (26.2) 28 (27.2) 5 (3.8) 40 (38.8)	0.124	2 (5.4) 8 (21.6) 7 (18.9) 4 (10.8) 16 (43.2)	0.169	3 (4.8) 18 (29.0) 10 (16.1) 3 (4.8) 28 (45.2)	0.026	11 (29.7) 21 (56.8) 4 (10.8) 0 (0.0) 1 (2.7)	0.131
Increase risk of operative complications (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	1 (1.0) 22 (21.4) 17 (16.5) 5 (4.5) 58 (56.3)	0.018	1 (2.7) 9 (24.3) 6 (16.2) 2 (5.4) 19 (51.3)	0.490	1 (1.6) 15 (24.2) 8 (12.9) 5 (8.1) 33 (53.2)	0.040	10 (9.7) 45 (43.7) 11 (10.7) 5 (4.8) 21 (31.1)	0.004
Has benefits but outweigh the risks (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	22 (21.4) 0 (0.0) 10 (9.7) 0 (0.0) 2 (1.9)	0.733	16 (43.2) 19 (51.3) 2 (5.4) 16 (43.2) 0 (0.0)	0.000	21 (33.9) 37 (59.7) 4 (6.5) 0 (0.0) 0 (0.0)	0.000	5 (13.5) 10 (27.0) 15 (40.5) 1 (2.7) 6 (16.2)	0.838
Has risks that outweigh the benefits (n,%) Strongly Agree Agree Neutral Strongly Disagree Disagree	2 (1.9) 23 (22.3) 15 (14.6) 10 (9.7) 53 (51.5)	0.089	2 (5.4) 8 (21.6) 4 (10.8) 7 (18.9) 16 (43.2)	0.009	2 (3.2) 14 (22.6) 6 (9.7) 10 (16.1) 30 (48.4)	0.003	40 (38.8) 60 (58.2) 1 (1.0) 0 (0.0) 2 (1.9)	0.034

pelvic pain, and a decrease in reoperation were not acknowledged when performing opportunistic salpingectomy in this study. This was in contrast to the study done by Gill et.al., which showed that physicians who performed bilateral salpingectomy took these previous factors into consideration.¹³

One deterring factor in performing bilateral salpingectomy noted in this study was the perceived increase in operative time during benign gynecologic procedure and specifically, for interval sterilization. Although several studies have noted that it was not

significant, the study of Gill et. al, noted that 40% of physicians will also not do opportunistic salpingectomy due to an increase in operative time.¹³

Counselling patients on performing opportunistic salpingectomy either during benign gynecologic procedure or as permanent sterilization was well-accepted. Although majority will advise bilateral salpingectomy for permanent sterilization methods, preference on the method still plays a role. While there is evidence that bilateral partial salpingectomy offers protection

from developing ovarian cancer, present literature states that doing bilateral total salpingectomy has a higher rate of reducing the risk of ovarian cancer.^{5,7} Based on the findings, there is a need to emphasize that performing bilateral total salpingectomy reduce the risk of ovarian cancer.

There is a need to reiterate that the standard of care for the high-risk group (BRCA carriers) is doing risk reducing bilateral salpingo-oophorectomy. If bilateral salpingectomy will be recommended in the high-risk group, it is in the context of the two-step strategy. The two-step strategy is doing salpingectomy initially to preserve ovarian function, then followed by oophorectomy during perimenopause. Further studies however are needed with regards to the safety issue of this option.⁷

In this study, we found out that practice of bilateral salpingectomy during benign gynecologic procedure and as a permanent sterilization procedure is still limited. The varied perceptions, inadequate understanding and unfamiliarity of opportunistic salpingectomy influenced the restricted utilization of the procedure.

A more extensive randomized sampling involving practicing obstetricians and gynecologists across all provinces in the country may be necessary, and open-ended questions could also be included to substantiate potential responses.

CONCLUSION AND RECOMMENDATIONS

Opportunistic salpingectomy offers obstetricians-gynecologists the opportunity to decrease risk of ovarian cancer. However, the practice of opportunistic salpingectomy among residents-in-training, fellows-in-training, and consultants in Metro Manila is not yet widely accepted and practiced.

The study determined that present knowledge on opportunistic salpingectomy is still lacking. Updating physicians during training and conferences with current literature, evidences and safety profile of opportunistic salpingectomy will lead to a better understanding of the importance and impact of this procedure in preventing ovarian cancer. The fallopian

tube being a plausible origin of ovarian, fallopian tube and peritoneal cancers has been established. Removing bilateral fallopian tubes to decrease the risk of ovarian cancer proves to be the strongest supporting factor in promoting opportunistic salpingectomy.

Although the majority of the physicians believe that bilateral salpingectomy is beneficial and is an effective sterilization procedure, only 50% will recommend this procedure and only 30-50% used this method. This may be largely due to the unfamiliarity of this method as a form of sterilization. Familiarization with bilateral salpingectomy as a form of permanent sterilization can be addressed by skills training to increase its acceptance and performance. Recognizing the importance of this procedure will lead to provision of informed consent to patients. This can improve awareness among the female population on the benefits of opportunistic salpingectomy.

Despite present perceptions on opportunistic salpingectomy, it was shown in studies that the procedure is safe and poses little risks or additional morbidity.^{7,8,11,12} Publishing local studies on the safety profile of opportunistic salpingectomy can increase its acceptance among obstetricians.

In the United States of America, the increase in the performance and wide acceptance of bilateral salpingectomy was due to the released statements of American College of Obstetricians and Gynecologists (ACOG) and the Society of Gynecologic Oncologists (SGO) encouraging physicians to counsel patients on the benefit of opportunistic salpingectomy.¹⁸ Formulating a practice guideline of opportunistic salpingectomy is another strategy to increase the rate of its performance.

To advocate the performance of opportunistic salpingectomy, there is a need to understand the effects afforded by the procedure in reducing ovarian, fallopian tube and peritoneal cancer risk and establish the safety profile of the procedure by releasing local practice guidelines and conducting workshops. These initial steps may help change the practice patterns and acceptance of opportunistic salpingectomy among obstetrics and gynecologic practitioners. ■

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Impact of the COVID-19 on cancer care access and delivery from the perspective of gynecologic cancer patients: A cross-sectional survey

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ABSTRACT

Background: Community restrictions and suspension of non-COVID services during the COVID-19 pandemic has largely affected cancer care. This is a local survey done to evaluate the cancer care access and delivery among gynecologic cancer patients during the COVID 19 pandemic.

Objective: To evaluate the COVID 19 impact among gynecologic cancer patients seen at the cancer clinic of a tertiary hospital in Manila, Philippines seen for consult and treatment from September 2022 to October 2022.

Methodology: A descriptive, cross-sectional study design was conducted among gynecologic cancer patients in a cancer institute of a tertiary public hospital in the Philippines. Systematic sampling was done and respondents were given a self-administered questionnaire. A mixed method analysis and NVIVO were used to interpret the data variables and findings on the impact of COVID-19 on cancer care access and delivery.

Results: There were 402 respondents. Among these respondents, 55% were between 41-59 years old, 47.5% were high school graduates and 74.4% were unemployed. The most common cancers among the respondents were cervical (41%), uterine (24%), and ovarian (30%). Forty-nine percent had their last cancer treatment within the last 6 months. In terms of access to healthcare services, 44.8% reported difficulty with follow ups due to transportation issues and border lockdowns, 28.4%

have had their care or treatment delayed for more than 2 weeks, while 27.6% had their treatment cancelled and felt uncertain as to when it will be rescheduled. The healthcare services affected were inperson visits (64.9%), imaging procedures (41%), and active treatments (37.3%) such as radiation and chemotherapy. The impact of COVID-19 to change of care showed that 36.6% expressed concern about their ability to pay for care while 46% were anxious about being exposed to COVID-19. In terms of COVID 19 impact on future ability to access cancer care, 51% knew where to get accurate information about COVID 19, 38-45% agreed that the financial impact of COVID-19 will make it hard for them to afford their care, while 31-50% were worried that it will be hard for them to get treatment during the pandemic.

Conclusion: Transportation issues and lockdowns contributed to difficulty in cancer care access and delivery. Telemedicine played an integral role in continuing delivery of these services. COVID 19 pandemic has impacted in-person visits, imaging procedures, and active treatments contributing to delays in patient management. Concerns about ability to pay for care and anxiety about being exposed to COVID-19 were factors that influenced change of care. Difficulties in receiving treatment during pandemic and its financial impact make it harder for them to pay for care. This impacts their future ability to access cancer care. Community restrictions, hospital re-prioritization to accommodate COVID patients, and financial difficulties contributed to delays in cancer care access and delivery.

Keywords: gynecologic cancer, COVID-19 pandemic, lockdown

INTRODUCTION

The COVID 19 pandemic has had a sweeping impact on cancer patients worldwide. The most recent pandemic is the Corona Virus Disease 2019 (COVID 19) is caused by the SARS-CoV2, an RNA virus highly pathogenic to humans which affects the respiratory, gastrointestinal and central nervous system of its infected host.¹ The outbreak started in Wuhan, China which

spread swiftly around the world and transcended rapidly into an international health emergency.² Last March 2020, the World Health Organization declared COVID 19 a pandemic since the 1918 Spanish Influenza. National lockdown followed and several community restrictions were put in place across the Philippines. In a multicenter study done across 365 cancer centers from 54 countries worldwide, majority of the centers (88%) reduced their usual level of care, and more than 55% of this reduction was due to precautionary measures. Other identified causes for disruption include overwhelmed system (19.94%), staff shortage (17.98%), and lack of access to medications (9.83%).³ Increasing precautionary measures were put in place such as social distancing, reducing number of patients in outpatient clinics, delaying elective diagnostic and surgical procedures and increasing telehealth services.^{4,5} Gynecological cancer patients are a unique set of vulnerable population where cervical, ovarian and uterine cancer leads as the 2nd, 4th and

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8th causes of cancer in women in the Philippines, respectively.⁶ The prognosis and outcome of cancer patients highly depends on prompt diagnosis coupled with a well-timed oncologic and surgical intervention. However, financial challenges, shortage of medical supplies and an overburdened healthcare system at the time of a pandemic can create unique obstacles for these patients. Furthermore, their immunocompromised state also puts them at highest risk of acquiring infection during the pandemic.^{7,8}

The height of the pandemic contributed to a 58% drop of outpatient consults at our cancer institute when compared to previous years.⁹ Safety and logistic concerns, lack of public transportation and community restrictions hindered gynecologic cancer patients from accessing cancer care. Patients undergoing chemotherapy at the cancer institute also decreased by 42% compared to the previous year and was due to the temporary suspension of chemotherapy services.⁹ Delivering continuous cancer care while taking appropriate measures to decrease the risk of exposure and infection should be balanced during cancer treatment.

There is a research gap on the impact of the COVID 19 on the healthcare services and its access among gynecologic cancer patients. This impact is more likely to affect low and middle income countries with a vulnerable healthcare system like the Philippines. Limited

medical and financial resources, shortage of healthcare staff, poor infrastructure, scarcity of medical supplies, and poor access to technology^{10,11,12} may hinder the ability to provide meaningful care to cancer patients at risk for disease progression.

This research will focus on the impact of the recent pandemic on the health services provided to gynecologic cancer patients and their experiences in accessing their healthcare needs.

The measures to be undertaken should be explored to help provide future solutions and directions to improve the delivery and access of patient care in the event of another pandemic. This study provides a better understanding of the awareness, perspectives, and experiences of gynecologic cancer patients with regard to cancer-related issues they are facing.

MATERIALS AND METHODS

Study design, Population and Sample size

A descriptive, cross-sectional study design was conducted among gynecologic cancer (i.e. uterine, ovarian, fallopian tube, peritoneal and cervical) patients under the charity service of the Division of Gynecologic Oncology in a cancer institute of a tertiary public hospital who were seen for consult, treatment planning, or with ongoing active treatment from September 2022 to October 2022.

A minimum sample size of 385 gynecologic cancer patients were required for this study at level of significance of 5% and a desired width of confidence interval of 10%. Systematic sampling was done until the desired sample size was met. There was total of 402 respondents.

Operational Definition of Terms:

1. COVID 19 – otherwise known as the coronavirus disease 2019 which is caused by a positive-sense single stranded

RNA virus called the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

2. Consult – when a known gynecologic cancer patient comes in for face-to-face checkup for any new complaint pertaining to her disease or care.
3. Treatment planning – when a known gynecologic cancer patient awaits final treatment plan pending imaging or diagnostic results.
4. Ongoing treatment – when a gynecologic cancer patient is ongoing active treatment and management in the form of radiation, chemoradiation, or chemotherapy. This also includes patients scheduled for definitive treatment in the form of surgery and are awaiting final surgical plan.
5. PhilHealth – is the Philippine's national health insurance provider

DESCRIPTION OF STUDY PROCEDURE AND DATA COLLECTION TOOL AND ANALYSIS

Approval from the Expanded Hospital Research Office (EHRO) and the University of The Philippines Manila Research and Ethics Board (UPMREB) was obtained prior to commencement of the study.

The self-administered questionnaire was adapted from a recent survey done by the American Cancer Society – Cancer Association Network (ACS-CAN) on the COVID 19 Impact on Cancer Patients and Survivors. The ACS-CAN survey research program is managed by the Morehouse School of Medicine Social and Behavioral Institutional Review Board. The questions were developed by an internal workgroup of various subject matter experts in coordination with social science researchers. Permission was obtained through email correspondence with the project manager on Survey Administration and Analysis of the American Cancer Society- Cancer Association Network to allow the primary investigator to use and distribute the said questionnaire.

This self-administered questionnaire was translated in the vernacular version (Tagalog) and was pretested among 10 respondents for comprehensibility prior to distribution. Feedback was organized according to themes. Major remarks regarding face validity was noted and modifications were applied to the draft survey.

Each questionnaire was assigned to a unique identifier code. The participants have an option to answer the English or vernacular (Tagalog) form of the survey. The self-administered questionnaires were distributed at the Cancer Institute OPD-Room 101. The objectives and benefits of the study were explained by the principal investigator. Participants were given the opportunity to raise questions regarding the survey. Consent to participate and waiver of documentation of informed consent were taken by the principal investigator. After the survey questionnaires were answered and returned, it was checked for completeness. Answers to each question were assigned a numerical code and data entry was done using Microsoft Excel Sheet.

Mixed method analysis was used to interpret the data variables and findings. Descriptive statistics was used to summarize the general and clinical characteristics of the

participants. Frequency and proportion were used for categorical variables (nominal/ordinal), mean and standard deviation for normally distributed interval/ratio variables, and median and range for non-normally distributed interval/ratio variables. All valid data was included in the analysis. Missing variables were neither replaced nor estimated. R 4.1.2 was used for data analysis. NVivo 12.7.0 was used to analyze qualitative data. Four questions were open-ended and were analyzed qualitatively. The questions were not answered by all respondents, so empty responses or “9999” responses were excluded. Complete responses were thematically grouped according to their content. Given that this study was primarily quantitative and that there were many responses, all themes were saturated.

RESULTS

There was a total of 402 respondents. Fifty-five percent of the respondents were between 41 to 59 years of age, high school graduates (47.5%), and currently unemployed (74.4%). PhilHealth was the primary source of health insurance among the respondents (85.3%). (Table 1)

Forty-one percent of the respondents had cervical cancer, followed by ovarian (30.3%), and uterine (24.1%) cancer. Thirty seven percent of these respondents had stage III disease, 20% were at stage I, 8% had cancer recurrence, while 6.7% were cancer free. Eighty seven percent were being actively treated, with 49.8% having had their last cancer treatment less than 6 months ago. (Table 2)

Patients reported delays and changes to their health care during the pandemic. The most common concern identified were delays in treatment and rescheduling of hospital visits. Twenty-eight percent of the respondents have had their care or treatment delayed for more than 2 weeks, while 27.6% had their treatment cancelled and felt uncertain as to when it will be rescheduled. Forty-four percent of the respondents had difficulty with follow up or consults due to transportation issues and border lockdowns. In addition to delays, 34.1% had their face

Table 2. Clinical profile of gynecologic patients (n=402)

	Frequency
Type of cancer	
Uterine	97 (24.1)
Ovarian	122 (30.3)
Fallopian tube	7 (1.7)
Peritoneal	6 (1.5)
Cervical	167 (41.5)
Vulvar	3 (0.7)
Educational attainment	
I	84 (20.9)
II	65 (16.2)
III	152 (37.8)
IV	42 (10.4)
Recurrence	32 (8)
Cancer free	27 (6.7)
Last cancer treatment status (years)	
<0.5 (6 months ago)	200 (49.8)
>0.5 to <1	67 (16.7)
>1 to <3	61 (15.2)
>3 to <5	22 (5.5)
>5 to <10	22 (5.5)
>10 to <20	4 (1)
>20	4 (1)
Have not been treated for cancer and was diagnosed within the last 5 years	17 (4.2)
Have not been treated for cancer and was diagnosed 5 years ago or more	5 (1.2)
Currently being treated for cancer	
No	49 (12.2)
Yes	353 (87.8)

to face consult converted to tele-consults, while 18.9% received their prescriptions via text messages. (Table 3.1)

The healthcare services impacted by the pandemic include in-person visits (64.9%), imaging procedures as part of monitoring (41%), and definitive/active treatments performed in the hospital (37.3%), and surgical procedures performed in the hospital (23.6%). (Table 3.2)

Aside from the impact of COVID-19 on healthcare access and services, 36.6% of respondents also expressed concern about their ability to pay for care. Forty-six percent were anxious about being exposed to COVID-19 and 23.6% were unsure if they should go out in public to get services related to their health.

Table 1. Demographic profile of gynecologic patients (n=402)

	Frequency
Age (years)	
<18	2 (0.5)
18–25	11 (2.7)
26–40	66 (16.4)
41–59	224 (55.7)
60–69	78 (19.4)
70–79	21 (5.2)
>80	0
Educational attainment	
Elementary	53 (13.2)
High school	191 (47.5)
College	158 (39.3)
Current employment status	
Unemployed	299 (74.4)
Self-employed	56 (13.9)
Employed	47 (11.7)
Primary source of health insurance or health care coverage	
No coverage of any type	29 (7.2)
Privately purchased health insurance	6 (1.5)
Employer-provided insurance	2 (0.5)
PhilHealth	343 (85.3)
Z package	19 (4.7)
Others	5 (1.2)
Don't know	8 (2)

Table 3.1. Impact of COVID-19 on access to healthcare services (n=402)

	Frequency (5%)
Care or treatment has been delayed by less than 2 weeks	72 (17.9)
Care or treatment has been delayed by more than 2 weeks	114 (28.4)
Care or treatment has been delayed and I don't know when I will be scheduled again	111 (27.6)
Care or treatment has been cancelled and I don't expect it to be rescheduled	57 (14.2)
A visit that was supposed to be in person has been changed to phone or video	137 (34.1)
My treatment was changed (for example, I was switched from an infused medication to a different medicine that I can take orally)	28 (7)
I received my prescriptions by text message instead of picking them up in person from the clinic	76 (18.9)
I have difficulty with follow up or consults due to transportation issues and border lock downs	180 (44.8)
Not sure	59 (14.7)

Table 3.2. Impact of COVID-19 to healthcare services (n=402)

	Frequency (5%)
In-person visits to providers for an examination or to plan my cancer care	261 (64.9)
Imaging procedures to find out if my cancer has grown or come back	165 (41)
Active treatment for my cancer administered in a health care facility (such as radiation treatments, chemo infusions, or injections)	150 (37.3)
Prescription medication I take at home	82 (20.4)
Surgical procedures performed at a hospital	95 (23.6)
Surgical procedures performed outside of a hospital	33 (8.2)
Supportive services (including occupational therapy, physical therapy, or mental health treatment)	49 (12.2)

However, despite the uncertainty that these patients were experiencing, 57.4% understood that the provider/facility made these changes to limit the spread of COVID 19. (Table 4).

In terms of impact of COVID 19 on the future ability to access cancer care, fifty-one percent knew where to get accurate information about COVID 19 that was specific to them as cancer patients, 31-50% expressed that it will be harder for them to get treatment during the pandemic, 38-45% were worried that the financial impact of COVID-19 will make it harder for them to pay for their health care, while 43-45% understood that they are at higher risk of serious health impact if they are infected with COVID-19 (Table 5).

Table 4. Impact of COVID-19 to change of care (n=402)

	Frequency (5%)
The provider or facility made the change to limit the spread of COVID-19 (n=401)	230 (57.4)
The provider or facility made the change to protect me from COVID-19 due to my cancer or other risk factors	208 (51.7)
The provider or facility indicated my treatment was considered elective and could be delayed	71 (17.7)
The provider or facility was no longer available because it was needed to treat COVID-19 patients	70 (17.4)
The provider or facility made the change, but I'm not sure why	41 (10.2)
The medication needed for my care was no longer available	31 (7.7)
Supplies necessary for my care (such as protective equipment, respirators, IV equipment) were no longer available	30 (7.5)
I no longer had transportation to the appointment	94 (23.4)
I was concerned about my ability to pay for care	147 (36.6)
I no longer had transportation to the appointment	185 (46)
I was concerned about my ability to pay for care	95 (23.6)

Table 5. Impact of COVID-19 on the future ability to access cancer care

	Frequency (5%)
I know where to get accurate information about COVID-19 that is specific to me as a cancer patient or survivor (n=392)	16 (4.1) 24 (6.1) 48 (12.2) 202 (51.5) 102 (26)
I am worried that the COVID-19 outbreak and the response to it will make it hard for me to get treatment for my cancer (n=394)	15 (3.8) 28 (7.1) 30 (7.6) 199 (50.5) 122 (31)
I am worried that the financial impact of COVID-19 will make it hard for me to afford the care I need as a cancer survivor (n=392)	17 (4.3) 23 (5.9) 21 (5.4) 180 (45.9) 151 (38.5)
As a cancer patient or survivor, if I am infected with COVID-19, I am at a higher risk of serious health impact (n=395)	21 (5.3) 13 (3.3) 11 (2.8) 171 (43.3) 179 (45.3)

QUALITATIVE ANALYSIS

Respondents were asked about how the COVID-19 pandemic affected their access to healthcare services (Table 6):

Among the 48 respondents, 29.6% reported difficulty in access to healthcare services brought about by community restrictions, border lockdowns, limited outpatient consults, rising transportation costs, swab requirements as well as fear of exposure to COVID infection; 12% reported difficulty in making appointments or followup consultations; 6% reported lack of information; and 2% reported poor teleconsultation quality.

Respondents were asked what other healthcare services were affected by the COVID 19 pandemic (Table 7):

Among the 28 respondents, 53.6% did not experience any effects in healthcare services citing they were only recently diagnosed after the height of the pandemic; 46.4% reported delayed or cancelled consultations and admissions, lack of

healthcare workers, and isolation protocols as factors that affected healthcare services during the COVID 19 pandemic.

Respondents were asked about how the COVID-19 pandemic affected their change of care (Table 8):

Among the 14 respondents, 28.6% were not able to experience any change of care; 21.4% identified communication problem with healthcare provider, financial constraint, and fear from acquiring COVID infection as factors that influenced their change of care.

Table 6. Impact of COVID-19 on access to healthcare services (open-ended)

Questions	Themes and categories
Impact of COVID-19 on access to healthcare services	No negative impact (6) Not experienced (3) Poor teleconsultation quality (1) Consultations difficult to do and schedule (6) Not able to consult because of lack of information (3) No operations, follow up, check up due to COVID-19 pandemic restrictions and/or lockdowns (14) • Delayed in general (4) • Due to restrictions and/or lockdowns in general (4) • Due to restrictions and/or lockdowns causing transportation issues, difficulty accessing services (4) • Due to positive result (1) • Due to fear of testing positive for COVID-19 (1) Did not experience during height of COVID-19 pandemic (15)

Table 7. Impact of COVID-19 to healthcare services (open-ended)

Questions	Themes and categories
Impact of COVID-19 to healthcare services	No experience (9) • Not experienced (4) • No experience with COVID-19 (4) • No problems experienced (1) Delayed check up admission due to COVID-19 pandemic restrictions and/or lockdowns (7) Check ups stopped (1) Health care worker issues (3) Isolation (1) All (1) Did not experience during height of COVID-19 pandemic (6)

Table 8. Impact of COVID-19 to change of care (open-ended)

Questions	Themes and categories
Impact of COVID-19 to change of care	Not experienced (7) • Not experienced (6) • No problems experienced (1) Communication problems (1) Financial reasons (1) Treated (2) Could not seek treatment (1) Did not experience during height of COVID-19 pandemic (2)

How the COVID-19 pandemic and its restrictions set in place to limit its spread affected their health care (Table 9):

Among the 220 respondents, 29% reported lessened hospital visits due to the following identified factors - anxiety from acquiring infection, community restrictions set by the local government and hospitals, swab test requirements and hospital reprioritization to accommodate COVID cases; 24% reported that delayed access to hospitals contributed to untreated cases or worsening of their condition during the COVID 19 pandemic; 20% reported that loss of source of income and livelihood affected their health care during the COVID 19 pandemic. Increase in cost of transportation and cost of screening for COVID 19 added to

their financial burden which affected their healthcare; 14% had difficult and or reduced hospital visits due to transportation issues and transfer to teleconsultation. Transportation issues were especially difficult for patients like senior citizens and patients coming from different provinces. The switch from face-to-face consultations to teleconsultation made it difficult for some respondents due to lack of education and access to technology; 8.2% reported that the restrictions left them feeling isolated from friends and stuck indoors which affected their social life and mental health. One respondent said *“COVID 19 and the restrictions put in place was very tough on both my mental and physical health. I can’t go outside and meet my friends and I can’t do any exercises. I want to forget my situation but I was quarantined at home. I just go out when I need to go to the hospital. It really affected my mental health.”* Besides reporting feelings of sadness, respondents also mentioned being worried and anxious during the pandemic: One respondent said *“Ang epekto ng covid sa akin ay laging umaandar ang nerbyos ko at anxiety at panic attack.”*; 3.2% said that their health care was not affected by the pandemic restrictions as they were diagnosed and treated beyond the height of the pandemic restrictions.

Table 9. How the COVID-19 pandemic and its restrictions affected their health care (open-ended)

Questions	Themes and categories
IN YOUR OWN WORDS, how did the COVID-19 and the restrictions put in place to limit its spread affected your health care?	Avoid infection by reducing exposure (21) Lessened hospital visits to reduce exposure (64) • Avoided hospital visits/hospital anxiety (12) • Less access to hospital: restrictions in general (38) • Less access to hospital: swab test (3) • Less access to hospital: patient categories/priority (11) Less or delayed access to hospital: worsened or untreated condition (53) Reduced and/or difficult hospital visits due to other pandemic restrictions (31) • Transportation issues (20) • Transfer to teleconsultation (11) Affected life outside treatment as well (44) • Affected work, source of funds, and livelihood (26) • Affected health and wellbeing (18) Not affected (7)

DISCUSSION

Financial challenges, shortage of medical supplies and the overburdened healthcare system at the time of the pandemic created unique obstacles for cancer patients. In this study, 199 respondents (50.5%) were worried that the COVID-19 outbreak will make it harder for them to get their cancer treatment and 180 respondents (45.9%) were worried that the COVID-19 outbreak will make it hard for them to afford care.

The balance between the risk of acquiring COVID 19 infection and the potential harms brought about by treatment interruptions in cancer care must be carefully weighed. In a study done by Jazieh et al. across 365 cancer centers from 54 countries worldwide, there was a detrimental impact of COVID 19 pandemic on cancer care, citing precautionary measures, reduced services, overwhelmed system, staff shortage and restricted access to medications as factors contributing to service disruption.¹³ These factors expose a highly vulnerable population to significant risk for progression and detriment at a time of pandemic.

Most hospitals faced unique challenges in delivering cancer care during the pandemic and have accordingly adjusted their services using various avenues. When the pandemic ensued,

this local institution was designated as a COVID referral center in Manila, and non-COVID health services were indefinitely suspended, including face to face consults and chemotherapy treatments. Oncologic surgeries were deferred and temporarily put on hold and the telemedicine service was subsequently launched as a measure to address the ongoing crisis at the height of the pandemic.

Disruption to delivery of treatment were experienced by the respondents where 114 respondents (28.4%) reported that their treatment has been delayed for more than 2 weeks while 111 respondents (27.6%) didn’t know when they will be scheduled again. In a study done by Veeraiah S, Chidambaram S, et al., the interruption of treatment and logistical issues during the pandemic were strongly associated with increased distress and fear of progression. The global health status, emotional functioning, social functioning and financial concerns differed significantly between patients with and without treatment interruption.¹⁵ This emphasizes the need to identify effective measures to avoid treatment interruptions and delays that can be detrimental to any cancer patient undergoing active definitive therapy.

As to the impact of COVID-19 on access to healthcare services, nearly half (44.8%) of the respondents reported experiencing difficulty with follow-up consultations due to transportation issues and border lock downs. To help ensure continuity of care, telehealth/telemedicine was launched. It should be noted that not all patients were fully knowledgeable on how to use the internet to access the website for scheduling purposes and others had difficulties navigating thru the process. Internet connection issues as well as digital literacy rates in our country are fairly limited especially among the elderly patients.¹⁶ These are some of the inherent factors of telemedicine that needs to be taken into consideration.

In this survey, there was difficulty in accessing healthcare services such as in-person visits, imaging procedures, treatment for their cancer including inpatient hospital surgical procedures during COVID 19 pandemic. The respondents agreed that changes and measures were made by the facility to limit the spread and protect them from COVID 19 infection. This was also reported in a study done by Jazieh AR, Akbalut H, Giuseoee C et al. across 356 cancer centers wherein more than a third had disruption of usual care and 80% were exposed to potential harms with missing chemotherapy treatment, reduced outpatient visits, and the lack of access to both cancer and non-cancer related treatments.¹⁷

This institution was designated as a COVID referral center, thus non-COVID services which included screening, diagnostics, emergency services, elective surgical procedures and chemotherapy sessions were indefinitely suspended. Aside from treatment delays brought about by re-prioritization, the added financial burden on patients from loss of income/livelihood have hindered them from seeking early access to healthcare services.

This study evaluated the healthcare delivery impact among our gynecologic cancer patients and gathered their insights about their experience in terms of health care access and exploring their general fears and concerns in accessing health care treatments as a result of the COVID-19 pandemic. This was conducted in one of the largest cancer care facility in the country. By understanding the gynecologic cancer patient’s experiences and their perceived impact of the COVID 19 pandemic on healthcare treatment and access, we will be able to better anticipate their needs and

efficiently manage any future surge or crises that may arise. This study also helped contribute to the rising evidence of the impact of the COVID 19 pandemic on cancer care.

One limitation of this survey was that the sampled population were from a Gynecologic Oncology charity service and thus may not represent the same impact on private patients. Nevertheless, this research may still represent a picture of the current status of the healthcare delivery and access to cancer care services among our gynecologic cancer patients.

CONCLUSION

Cancer care has largely been affected by the pandemic as shown in this study. The financial burden from loss of income, delayed follow ups, strict hospital and community protocols and suspension of cancer care services have greatly contributed to interruption of cancer care and exacerbated delays in cancer care

access and treatment. Understanding the gynecologic cancer patient's experiences and their perceived impact of COVID 19 on healthcare treatment and access will help better anticipate their needs and help cancer centers to efficiently manage any future surge or crises that may arise.

RECOMMENDATION

It is vital to explore the experiences and perception of the frontline health workers in the fight against COVID 19 infection to evaluate the efficiency of the healthcare system during the pandemic and the adequacy of the government response to address healthcare related issues. Future research can be done to focus on how to identify cancer patients at risk for mental health issues and dysfunction brought about by the pandemic and address these issues to provide a wholistic approach in their cancer care treatment. ■

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Mental health and well-being of fellows and residents handling cancer patients in the the corona virus pandemic

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ABSTRACT

Background: The Corona virus pandemic has affected the mental health and well-being of health care professionals in handling their patients.

Objective: To identify factors that trainees experienced while handling cancer patients during pandemic on their concerns and anxiety, particularly mental health and well-being

Methodology: A cross-sectional survey, the med-ex covid-19 study which was adapted from Cravero et al was distributed focusing on the first 9 months of the COVID 19 pandemic that evaluated trainees perception, its impact of missed training, and loss of educational opportunities as well as overall well-being. The respondents also completed the Beck Depression Inventory-II (BDI-II) and the Cohen Perceived Stress Scale (PSS-10). All surveys are permitted for use by their respective authors in this particular study. All surveys were sent through google form through electronic mail. The survey was completed by 42 trainees all over the Philippines who specialized in Gynecologic, Medical, Surgical and Radiologic Oncology including Palliative Medicine. Factors were identified specific to COVID 19 pandemic that adversely

affects trainees' well-being.

Results: The number of patients with COVID 19 diagnosed with cancer that a trainee cared for from May to December 2020 was 1-30. Access to PPE and testing kits was available as needed. There was a major change in face-to-face consultation to telemedicine, which is a concern of trainees in their future preparedness for independent practice. Work schedule including routine outpatient procedures had major reductions and a majority of trainees report symptoms of burn-out a few times a week to once a week. They had also a major concern about the risk of spreading the disease to people close to them. The mean PSS-10 total score was 45 signifying a high level of perceived stress and BDI-II, using a cut-off score of 16, the proportion of probable depression was not significant where half of the trainees comprising 52.4% (22/42) are with normal responses and are considered only as ups and downs.

Conclusion: Residents and fellows who specialized in cancer care are as vulnerable in terms of mental health as the patients they take care of during the corona virus pandemic.

Keywords: *Coronavirus, fellows, mental health, residents, telemedicine, training program*

INTRODUCTION

The Coronavirus disease 2019 (COVID-19) pandemic has been unparalleled in clinical severity and infectivity since the 1918 Spanish influenza or the 1918 pandemic and continues to affect the planet.¹ In the last week of December 2019, an outbreak of a peculiar pneumonia distinguished by fever, dry cough, fatigue, and occasional gastrointestinal symptoms occurred during a Huanan Seafood Wholesale Market, in Wuhan, Hubei, China.² The COVID-19 pandemic within the Philippines is a component of the worldwide pandemic of COVID-19 caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The index case within the Philippines was identified on January 30, 2020, a 38-year-old Chinese woman who was confined at San Lazaro Hospital in Metro Manila.³ On February 1, 2020, a test result from a 44-year-old Chinese man turned out positive for the virus, making the Philippines the first country outside China to record a confirmed death from the disease.⁴⁻⁶ On the 9th of March 2020, President Duterte has formally declared a state of public health emergency within the

Philippines.⁷ Two hundred fifty-four new cases were confirmed on April 29, bringing the COVID-19 cases within the country to 8,212 and on the subsequent day most regions were placed to boost community quarantine which ended on May 31. On June 28, in keeping with the WHO, the Philippines has the fastest COVID-19 cases rise in the western pacific region. On July 8, the country breached the 50,000-mark of COVID-19 cases recorded bringing the COVID-19 cases to 50,359. On August, the country breached the 100,000-mark on the number of COVID-19 cases. Health care workers and medical societies recommends a "timeout" to President Duterte to retrain Metro Manila back on ECQ as COVID-19 cases surges.⁸ On August 26, the country breached the 200,000 mark with 202,361 total confirmed cases. In September 26, cases in the country breached 300,000 mark and on October 30, Malacañang announced that Metro Manila is placed under general community quarantine. On November 11, the country breached the 400,000 mark. On December 26, Malacañang suspended incoming flights from the United Kingdom from December 24–31, 2020, over the fear of the new and more infectious coronavirus variant, VOC-202012/01. Consequently, all inbound passengers who are within the United Kingdom within 14 days before arrival in the country are also barred from entry, and travelers from the United Kingdom before the said dates needed to undergo quarantine. As of December 23, 40 countries have already issued travel restrictions to and from the United Kingdom.⁹ On January 3, 2021, another variant from Florida was detected

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and banned travelers from the USA. Another variant from UAE was detected on January 13. The country extended the travel ban to 35 countries and territories including Australia, Austria, Brazil, Canada, China, Denmark, Finland, France, Germany, HK, Iceland, India, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Lebanon, Luxembourg, Netherlands, Norway, Oman, Pakistan, Portugal, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, UK, and the US from January 15–31, 2021; while UAE and Hungary from January 17–31, 2021 amid the new virus strain. On February 15, the country breached the 550,000-mark on the number of COVID-19 cases with an actual total of 550,860. On February 28, at around 4 pm at Villamor Air Base, the country officially received its first batch of COVID-19 vaccines, became the last ASEAN country to do so. These CoronaVac vaccines were from Sinovac Biotech donated by China consisting of 600,000 shots.¹⁰ On March 7, The country has received additional 38,400 doses of AstraZeneca COVID-19 vaccines which at NAIA 3 as confirmed by the National Task Force against COVID-19. On March 9, the country has breached the 600,000 mark on the entire number of COVID-19 cases which peaked at 600,428. On April 2, the country recorded an all-time daily high of 15,310 new COVID-19 cases as the total confirmed cases skyrocketed to 771,497. Active cases surged to 153,809 which is also the highest recorded number of infected patients in a single day. On May 7, the country breached the 1-M mark on the total number of recoveries as DOH announced additional 4,227 recuperated patients, bringing the total to 1,003,160 at a 92.22% rate. On June 28, the Philippines has administered over 10 million doses of COVID-19 vaccines to its population nearly four months since its inoculation program began.¹¹ On August 6 to 20, 2021, President Duterte again declared enhanced community quarantine due to the spread of the delta variant. We don't seem to be yet within the safe zone and psychological state still affects trainees, some is also more vulnerable than others to the psychosocial effects and are particularly susceptible to emotional distress, given their risk of exposure to the virus, concern about infecting and caring for their loved ones, and changes in the curriculum that may affect personal growth. These issues greatly affect trainees that handle cancer patients. Current review of mental sequelae in samples of quarantined patients and of primary health workers may be instructive; it exhibits numerous emotional outcomes, including stress, depression, irritability, insomnia, fear, confusion, anger, frustration, boredom, and stigma associated with quarantine, some of which persisted after the quarantine was lifted.¹² A report conducted in communities affected by severe acute respiratory syndrome (SARS) in early 2000 revealed that although community members, affected individuals, and health care workers were motivated to comply with quarantine to reduce the risk of infecting others and to protect the community's health, emotional distress tempted some to consider violating policies. As for other published studies contrary to this paper on health care providers themselves, the novel nature of SARS-CoV-2, inadequate testing, limited treatment options, insufficient PPE and other medical supplies, extended workloads, and other emerging concerns are sources of stress and have the potential to overwhelm systems.¹³ Health care systems will need to address the stress of fellows and residents handling cancer patients by monitoring reactions and enforcement, changes in assigned task schedules, altering expectations, and generating mechanisms to offer psychosocial support as needed.

OBJECTIVE

To identify factors brought about by the COVID-19 pandemic that affected the training program, mental health, and well-being of the residents and fellows handling cancer patients.

REVIEW OF RELATED LITERATURE

Published journals demonstrated that trainees in the medical field face burnout, depression, and anxiety during their training.¹⁴⁻¹⁶ Consequently, increased possibility for a decline in their mental health and well-being due to the pandemic is highly plausible. The psychological effect of the COVID-19 pandemic among health care personnel (HCP) was demonstrated by Lai et al,¹⁷ who found that HCP in China demonstrated symptoms of depression (50%), anxiety (44%), and distress (71%). In India, Chew et al¹⁸ reported that 12.4%, 17.1%, and 3.8% of HCP suffered from depression, anxiety, and stress, respectively. The HCP caring for patients with COVID-19 in Singapore¹⁹ also reported symptoms of depression (8.9%), anxiety (14.5%), and stress (6.6%). Similarly, reviews of psychological sequelae among HCP revealed a number of negative emotional outcomes, including stress, depression, irritability, fear, and boredom associated with quarantine.²⁰ Studies have described the impact of inadequate testing, limited treatment options, and insufficient personal protective equipment (PPE) on the psychological health of HCP.²¹⁻²⁴ Gaining an understanding of the effect of the COVID-19 pandemic on resident physicians and fellows may provide training committees with information to compile resources and strategies to support well-being during this pandemic. In the Philippines, which is a low to middle-income class country, there was no study done yet on the impact of the pandemic to the training program as well as their mental health and well-being of residents and fellows who handles cancer patients which are expected to be of vulnerable population in this pandemic.

RESEARCH DESIGN

This is a cross-sectional survey by distributing questionnaires through electronic mail available in english through google form to physician trainees in the Philippines who handle cancer patients. Fellows and residents are defined in our study as those who have completed medical school and are engaged in further training in their respective fields to prepare them for eventual independent practice in their chosen specialty that involved handling cancer patients. The survey was voluntary, anonymous, included no personal identifiers or protected health information, and used no incentives for participation. Fellows described here are surgical, medical and gynecologic oncologist who completed their residency training and residents described here are those trainees from radiologic oncology and palliative medicine who are currently training in their chosen field after passing the board examination.

METHODOLOGY

This study was approved by the Institutional review board last February 4, 2021. The questions focused on the peak of the pandemic in the country which is from March to December 2020. Trainees were encouraged in an accredited training

program nationwide involved in the particular field to complete the survey through answering via electronic mail by completing the google form. Letters were sent to each department head of the specialty to conduct survey questions to their trainees. Included in the survey are the only 2 training institutions in Gynecologic oncology particularly Philippine General Hospital and Dr. Jose R. Reyes Memorial Medical Center. Palliative Medicine residents and surgical oncology fellows from Dr. Jose R. Reyes Memorial Medical Center. Medical Oncology fellows from the University of Santo Tomas, St. Luke's Medical Center, Philippine General Hospital, Dr. Jose R. Reyes Memorial Medical Center, Makati Medical Center, Veterans Memorial Medical Center and National Kidney, and Transplant Institute. Accredited training in Radiologic Oncology from the University of Santo Tomas, St. Luke's Medical Center, Philippine General Hospital, Dr. Jose R. Reyes Memorial Medical Center, Makati Medical Center, The Medical City, Perpetual Help Medical Center, and Southern Philippines Medical Center.

Study instruments

Three survey questionnaires were adapted with permission from their respective authors. The survey was distributed anonymously to trainees with no identifiers.

Med-ex Covid 19 Study

All questions were optional consisting of 54-item adapted from Cravero et al, where survey forms were distributed internationally which aimed to describe the impact of the number of patients with COVID-19 that trainees cared for on three domains of trainee experience on safety and access to PPE, training and professional development and well-being and burnout. All surveys were completed between March 2021 to July 2021. This survey includes demographic information. They were asked to describe their experiences during the peak months of pandemic from March to December of 2020. Survey questions addressed access to PPE and testing for SARS-CoV-2 and whether the respondent or anyone in their training program tested positive for the virus. Questions regarding trainees' perception of their own safety and concerns about contracting and transmitting COVID-19 inside and outside their training locations were also included. The survey included questions about specific changes to training schedules related to COVID-19 and trainee attitudes regarding schedule changes, the volume of patient encounters and procedures, the transition to teleconsultation, the perceived impact of using on both patient care and physician training and changes to didactic learning. The survey also included Cohen Perceived Stress Scale (PSS-10) (Table 1) and the Beck Depression Inventory-II (BDI-II) (Table 2).

Beck Depression Inventory

The beck depression inventory II (BDI-II) consists of a 21-item self-report rating inventory that measures characteristic attitudes and symptoms of depression, it was developed by Beck et al. The highest possible total for the whole test would be sixty-three and the lowest possible score for the test would be zero. The total score of 0-10 means that these ups and downs are considered normal. A score of 11-16 means mild mood disturbance.

Table 1. Perceived Stress Scale-10 (PSS-10)

BDI - II	
Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully. And then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including item 16 (Changes in Sleeping Pattern) or item 18 (Changes in Appetite).	
1. Sadness	8. Self-Criticalness
o. I do not feel sad.	o. I don't criticize or blame myself more than usual.
1. I feel sad much of the time.	1. I am more critical of myself than I used to be.
2. I am sad all the time.	2. I criticize myself for all of my faults.
3. I am so sad or unhappy that I can't stand it.	3. I blame myself for everything bad that happens.
2. Pessimism	9. Suicidal Thoughts or Wishes
o. I am not discouraged about my future.	o. I don't have any thoughts of killing myself.
1. I feel more discouraged about my future than I used to.	1. I have thoughts of killing myself, but I would not carry them out.
2. I do not expect things to work out for me.	2. I would like to kill myself.
3. I feel my future is hopeless and will only get worse.	3. I would kill myself if I had the chance.
3. Past Failure	10. Crying
o. I do not feel like a failure.	o. I don't cry anymore than I used to.
1. I have failed more than I should have.	1. I cry more than I used to.
2. As I look back, I see a lot of failures.	2. I cry over every little thing.
3. I feel I am a total failure as a person.	3. I feel like crying, but I can't.
4. Loss of Pleasure	11. Agitation
o. I get as much pleasure as I ever did from the things I enjoy.	o. I am no more restless or wound up than usual.
1. I don't enjoy things as much as I used to.	1. I feel more restless or wound up than usual.
2. I get very little pleasure from the things I used to enjoy	2. I am so restless or agitated, it's hard to stay still.
3. I can't get any pleasure from the things I used to enjoy	3. I am so restless or agitated that I have to keep moving or doing something.
5. Guilty Feelings	12. Loss of Interest
o. I don't feel particularly guilty.	o. I have not lost interest in other people or activities.
1. I feel guilty over many things I have done or should have done.	1. I am less interested in other people or things than before.
2. I feel quite guilty most of the time.	2. I have lost most of my interest in other people or things.
3. I feel guilty all of the time.	3. It's hard to get interested in anything.
6. Punishment Feelings	13. Indecisiveness
o. I don't feel I am being punished.	o. I make decisions about as well as ever.
1. I feel I may be punished.	1. I find it more difficult to make decisions than usual.
2. I expect to be punished.	2. I have much greater difficulty in making decisions than I used to.
3. I feel I am being punished.	3. I have trouble making any decisions.
7. Self-Dislike	14. Worthlessness
o. I feel the same about myself as ever.	o. I do not feel I am worthless.
1. I have lost confidence in myself.	1. I don't consider myself as worthwhile and useful as I used to.
2. I am disappointed in myself.	2. I feel more worthless as compared to others.
3. I dislike myself.	3. I feel utterly worthless.
	15. Loss of Energy
	o. I have as much energy as ever.
	1. I have less energy than I used to have.
	2. I don't have enough energy to do very much.
	3. I don't have enough energy to do anything.

Table 2. Beck Depression Inventory

	N	%
1 Choose the option that best describes your level of training:		
Resident	24	57.1%
Fellow	18	42.9%
2 What specialty is/was your residency in?		
Radiologic Oncology	21	50.0%
Gynecologic Oncology	11	26.2%
Medical Oncology	5	11.9%
Surgical Oncology	3	7.1%
Palliative Medicine	2	4.8%
3 If you are in fellowship, what specialty is your fellowship in?		
Radiologic Oncology	21	50.0%
Gynecologic Oncology	11	26.2%
Medical Oncology	5	11.9%
Surgical Oncology	3	7.1%
Palliative Medicine	2	4.8%
4 What year of medical training are you in?		
First	13	31.0%
Second	10	23.8%
Third	9	21.4%
Fourth	9	21.4%
Fifth	1	2.4%

A score of 17-20 means borderline clinical depression. A score of 21-30 means moderate depression. A score of 31-40 means severe depression and over 40, means extreme depression.

Perceived Stress Scale

The 10-item perceived stress scale (PSS-10), proposed by Cohen et al, and validated by Reis et al, is a self-reported measure of the degree of stressfulness of situations encountered. The results range from 0 to 40 with a higher score indicating an increased perception of stress.²⁶ Scores ranging from 0-13 would be considered low-stress. Scores ranging from 14-26 would be considered moderate stress and scores ranging from 27-40 would be considered high perceived stress.

Study Subjects

Study subjects will be the trainees who handles cancer patients. These are accredited training institution in the Philippines who trains fellows and residents in the field of medical, surgical, radiologic and gynecologic oncology and palliative medicine. Those trainees who are not handling cancer patients and are not in the specialty mentioned above are excluded.

Data Collection

The survey will collect key demographic and residency/fellowship information, without identifying the institutions or medical centers that the training program operated in. All data obtained from this study will be stored for 3 years in the archives of the Department of Obstetrics and Gynecology-Gynecologic Oncology Section. These data will be used solely for the study and consultant staff and fellows can access these data. Data will be destroyed after the said duration. All surveys were sent through a google form via electronic mail.

RESULTS

Characteristics of residents and fellows who completed the survey

The survey was completed by 42 trainees all over the Philippines who had accredited training institutions comprising 57.1% (24/42) residents and 42.9% (18/42) fellows. The majority of the respondents are in their first 2 years of training (Table 3). Male respondents were 45.2% (19/42) and female respondents were 54.8% (23/42) mostly in the age range of 31-35 years old (23/42, 54.8%). 61.9% (26/42) and were mostly single and have no children (78.6%) (Table 4). Most respondents were radiologic oncologist (21/42, 50%), followed by gynecologic oncologist (10/42, 23.8%), medical oncologist (5/42, 11.9%), surgical oncologist (3/42, 7.1%) and the least came from palliative medicine (2/42, 4.8%) (Table 3). 61.9% (26/42) of trainees did not came from a covid center and 35.7% (15/42) came from a covid facility (Table 5).

Table 3. Demographic data

50 What is your age?		
< 25	1	2.4%
26 - 30	11	26.2%
31 - 35	23	54.8%
36 - 40	6	14.3%
40+	1	2.4%
51 What is your gender?		
Female	23	54.8%
Male	19	45.2%
52 What is your marital status?		
Single	26	61.9%
Married	10	23.8%
In a relationship, not married	5	11.9%
Separated	1	2.4%
53 Are you or is your partner currently pregnant?		
No	42	100.0%
54 Do you have children?		
No	33	78.6%
Yes	9	21.4%

Table 4. Demographic data

49 Is your Hospital a Covid Center?		
No	26	61.9%
Yes	15	35.7%

Table 5. Demographic data

5 Approximately how many patients did you provide clinical care for who were confirmed to have COVID 19 from March until December 2020?		
1-30	42	100.0%
6 Where did you provide care for patients confirmed to have COVID 19? [select all that apply]		
Clinic - telephone visits, Emergency room	22	52.4%
Inpatient non-intensive care unit wards	20	47.6%
7 Were you provided with appropriate personal protective equipment (PPE) when you cared for patients with or suspected to have COVID 19? (Answer based on your understanding of the PPE guidelines pertaining to your training site in March to December 2020).		
Always	1	2.4%
Most of the time	41	97.6%
8 Were you provided with adequate access to testing for COVID 19 if you had symptoms or had been exposed?		
Most of the time	42	100.0%
9 Were patients provided with adequate access to testing for COVID 19 if they had symptoms or had been exposed?		
Sometimes	41	97.6%
Always	1	2.4%
10 Have you felt at any time that you might have symptoms of COVID 19?		
Yes	42	100.0%
11 Have you or any colleagues in your residency or fellowship training program tested positive for SARS-CoV2 (the virus that causes COVID 19)? [select all that apply]		
No- neither myself nor my colleagues have tested positive	41	97.6%
Yes- colleagues have tested positive	1	2.4%

Impact of caring for patients with COVID-19 on trainee safety and access to PPE

The number of patients with COVID-19 that a trainee cared for from May to December 2020 was 0-30. Access to PPE and COVID-19 testing was available as needed. All respondents and patients were provided with adequate access to testing for COVID 19 once with symptoms or had been exposed. Respondents felt at any time that they have symptoms of COVID 19 and at least one of their colleagues was tested positive. Radiologic oncology service provided care to those patients who tested positive on teleconsultation and were referred to the main service for final disposition. All other specialties provide care for their patients during admission (Table 6).

Impact of caring for patients with COVID-19 on training and professional development

The majority of trainees indicated some degree of concern about the effect of the COVID-19 pandemic on their future preparedness for independent practice. Trainees think that changes in their training particularly remote didactic learning (19%, 8/42), decreased volume of patients, phone/video rather than in person clinic visits, remote didactic learning decreased volume of procedures, exposure to a fewer disease procedure (14.3%, 6/42), decrease volume of patients (9.5%, 4/42), decreased volume of procedures (7.1%, 3/42), exposure to a fewer disease processes (7.1%, 3/42) and phone/video rather than in-person clinic visits (4.8%, 2/42) affected their preparedness to practice independently. Some trainees also felt that they were put to unnecessary risk of contracting COVID 19 but still, majority are satisfied with what the training program did in spite of the crisis (Table 7). All of the respondents were satisfied with the communication they received from their institution

Table 6. Impact of COVID-19 on trainee and safety access to PPE

37 Are you concerned that the COVID pandemic adversely affected your preparedness to practice in your field after residency or fellowship?		
Slightly concerned	13	31.0%
Somewhat concerned	11	26.2%
Not at all concerned	10	23.8%
Moderately concerned	6	14.3%
Extremely concerned	2	4.8%
38 What changes to your training do you think will affect your preparedness to practice independently in your field after graduation? [select all that apply]		
o Remote didactic learning	8	19.0%
o Decreased volume of patients, Phone/video rather than in person clinic visits, Remote didactic learning, Decreased volume of procedures, Exposure to a fewer disease processes	6	14.3%
o Decreased volume of patients	4	9.5%
o Decreased volume of procedures	3	7.1%
o Exposure to a fewer disease processes	3	7.1%
o Phone/video rather than in person clinic visits	2	4.8%
o Decreased volume of patients, Phone/video rather than in person clinic visits, Remote didactic learning, Decreased volume of procedures	2	4.8%
o Phone/video rather than in person clinic visits, Remote didactic learning	2	4.8%
o Decreased volume of patients, Decreased volume of procedures, Exposure to a fewer disease processes	2	4.8%
o Decreased volume of patients, Phone/video rather than in person clinic visits, Decreased volume of procedures, Exposure to a fewer disease processes	2	4.8%
o Remote didactic learning, Decreased volume of procedures, Exposure to a fewer disease processes	1	2.4%
o Decreased volume of patients, Phone/video rather than in person clinic visits, Exposure to a fewer disease processes	1	2.4%
o Phone/video rather than in person clinic visits, Decreased volume of procedures	1	2.4%
o Decreased volume of patients, Remote didactic learning	1	2.4%
o Decreased volume of patients, Decreased volume of procedures	1	2.4%
o No significant change for us	1	2.4%
o Decreased volume of patients, Remote didactic learning, Exposure to a fewer disease processes	1	2.4%
o Decreased volume of patients, Remote didactic learning, Decreased volume of procedures, Exposure to a fewer disease processes	1	2.4%
39 The COVID 19 pandemic has changed what specialty/sub-specialty I plan to pursue in the future.		
1	4	9.5%
2	5	11.9%
3	11	26.2%
4	6	14.3%
5	16	38.1%
40 The COVID 19 pandemic has impeded my progress towards my career goals.		
1	4	9.5%
2	6	14.3%
3	14	33.3%
4	9	21.4%
5	9	21.4%
41 The COVID 19 pandemic has advanced my progress towards my career goals.		
2	5	11.9%
3	28	66.7%
4	6	14.3%
5	3	7.1%
42 I felt valued by my residency or fellowship program.		
Everyday	19	45.2%
A few times a week	12	28.6%
Once a month or less	5	11.9%
Once a week	4	9.5%
A few times a month	2	4.8%
43 I felt valued by my institution.		
A few times a week	14	33.3%
Everyday	10	23.8%
Once a month or less	6	14.3%
Once a week	5	11.9%
A few times a month	5	11.9%
Never	2	4.8%

in dealing with COVID 19. When asked if the pandemic has changed what subspecialty they plan to pursue in the

future, 38.1% (16/42) strongly disagree and only 9.5% (4/42) strongly agree. A follow-up question-related to the previous query states that if the pandemic has impeded the progress of the trainees towards career goals, 33.3% (14/42) answered neutrally whereas 4 (9.5%) trainees strongly believe that it delays its growth and 9 (21.4%) believes that it did not affect their growth in their chosen specialty. When asked if the pandemic led to advanced their progress towards their career goals, 66.7% (28/42) answered neutrally, 3 (7.1%) trainees strongly disagrees that it did not advance their progress in contrast to 5 (11.9%) that believes that it did advance their progress toward career goals. In terms of being valued at their section, the majority of trainees felt that they are valued every day and only 2 (4.8%) answered that they felt valued only a few times a month. As for their institution, the majority of the trainees felt that they were valued every day to a few times a week while 2 (4.8%) felt that they were not appreciated by their institution. The majority of trainees felt that they are of great value to their community and only one (2.4%) trainee did not felt appreciated. 59.5% (25/42) trainees felt that they are in the right specialty contrary to one (2.4%) trainee that doesn't feel right on the chosen field. Majority of trainees claimed that they contributed to the fight against covid everyday to few times a week and only 3 (7.1%) trainees felt that they never felt that they contributed against the fight on covid 19 pandemic (Table 8).

Table 7. Impact on training and professional development

44 I felt valued by my community.		
Everyday	16	38.1%
A few times a week	12	28.6%
Once a week	10	23.8%
A few times a month	3	7.1%
Once a month or less	1	2.4%
45 I felt I was in the right specialty for me.		
Everyday	25	59.5%
Once a week	7	16.7%
A few times a week	5	11.9%
Once a month or less	3	7.1%
A few times a month	1	2.4%
Never	1	2.4%
46 I felt I contributed to the fight against COVID-19.		
Everyday	16	38.1%
A few times a week	15	35.7%
Once a week	5	11.9%
Once a month or less	2	4.8%
A few times a month	2	4.8%
Never	2	4.8%

Table 8. Contribution against COVID 19

15 Contracting COVID 19 while at work or while fulfilling requirements of your training program.		
V3	16	38.1%
V4	15	35.7%
V5	11	26.2%
16 Contracting COVID 19 outside of the hospital or while doing activities outside of the requirements of your training program.		
V4	24	57.1%
V5	18	42.9%
17 Spreading COVID 19 to your family or friends outside of the hospital.		
V4	17	40.5%
V5	25	59.5%
18 Being a vector for the spread of COVID 19 to patients.		
V4	11	26.2%
V5	31	73.8%
19 Would you have liked to have had the opportunity to be more involved in the care of patients confirmed to have COVID 19?		
No	42	100%

Degree of concern on contracting COVID 19

The utmost concern during this pandemic is that trainees as being the carrier of the virus might be contracting the disease while training and outside of the hospital especially to their patients, co-workers, family and friends. All respondents decline the opportunity to be involved in the care of patients confirmed with COVID 19 (Table 9).

Table 9. Degree of concern on contracting COVID 19

20 Did the COVID 19 pandemic affect your work/rotation schedule?		
Yes	42	100.0%
21 How did your schedule change? [select all that apply]		
o I was not allowed to do routine outpatient procedures.	41	97.6%
o I was redeployed to a service outside of my specialty to care for COVID 19 patients., I was redeployed to a service outside of my specialty to care for non-COVID 19 patients.	1	2.4%
22 Was your schedule change voluntary?		
No	42	100%
23 How did you feel about the change in your schedule?		
Anxious	41	97.6%
sad	1	2.4%
24 Did you work more or fewer hours as a result of these schedule changes?		
The same	32	76.2%
Slightly less	10	23.8%
25 How did your compensation change during the COVID 19 pandemic? [select all that apply]		
My compensation did not change	42	100.0%
26 Did the COVID 19 pandemic affect your didactic schedule?		
Yes	40	95.2%
No	2	4.8%
27 How did your didactic schedule change? [select all that apply]		
Didactics were converted to remote learning (e.g. zoom, skype, other)	41	97.6%
Didactics were cancelled	1	2.4%
28 How did remote learning affect resident or fellow learning?		
Improved	16	38.1%
Neutral	16	38.1%
Worsened	5	11.9%
Significantly Improved	5	11.9%
29 How often did you participate in remote didactics compared to in-person sessions?		
Significantly more often	21	50.0%
Slightly more often	14	33.3%
The same	3	7.1%
Slightly less often	3	7.1%
Significantly less often	1	2.4%
30 Did you use telehealth (video or phone) visits to care for patients during the pandemic?		
Yes	34	81.0%
No	8	19.0%
31 Did you feel you received adequate training on telehealth?		
No	31	73.8%
Yes	11	26.2%
32 How did telehealth visits affect patient care?		
3	19	45.2%
4	11	26.2%
2	10	23.8%
5	2	4.8%
33 How did telehealth visits affect your development as a healthcare provider?		
1	1	2.4%
2	10	23.8%
3	23	54.8%
4	8	19.0%
34 Did you see a reduction in non-COVID-related procedures or operations for you to be involved with at your institution during the pandemic?		
o Yes: There was a substantial reduction of 50-100% in non-urgent procedures	15	35.7%
o Yes: There a reduction of 0-50% in non-urgent procedures	10	23.8%
o Yes: Almost all non-urgent procedures were cancelled	8	19.0%
o No: There was no reduction in non-urgent procedures	7	16.7%
o No: I do not do procedures as part of my residency/fellowship	2	4.8%

Impact of the pandemic on the training program

All respondents were affected by the pandemic in terms of their work schedule including routine outpatient procedures. Almost all trainees were anxious because of the pandemic that might affect their training program but a majority of the working hours is still the same (76%, 32/42) compared to 23% who responded that it was slightly less. The compensation to the trainees did not change and a shift from face-to-face didactics and conferences to webinars had improved (38.1%, 16/42), neutralized (38.1%, 16/42) and the remaining 5 (11.9%) noted that it significantly improved. However, five (11.9%) trainees felt that it got worse during the shifting of didactics to remote learning. Half of the trainees states that shifting of didactic learning through webinar were significantly more often (50%, 21/42), 33.3% (14/42) slightly more often, 3 of the trainees felt that it was just the same as pre-pandemic. Regarding the procedure done by trainees, 35.7% (15/42) claimed there was a 50-100% reduction in non-urgent procedures. 23.8% (10/42) responded that there was a 0-50% reduction in non-urgent procedures. 19% (8/42) answered that almost all non-urgent procedures were cancelled from April to December 2020. In contrast, 7 of the respondents (16.7%) said that there was no reduction in non-urgent procedures and 2 respondents do not do procedures as part of the training program (Appendix 10). In terms of non-covid related outpatient consultations and appointments 38.1% (16/42) of the trainees noted a 0-50% reduction in non-urgent outpatient appointments. 33.3% (14/42) noted a substantial reduction of 50-100% in non-urgent outpatient appointments and 23.8% (10/42) claimed that almost all non-urgent outpatient appointments are cancelled. The remaining two trainees answered that there was no reduction in outpatient appointments. Regarding the hospital admissions of non-covid related patients, 52.4% (22/42) noted a 0-50% reduction in admissions, 33.3% (14/42) claimed to have a substantial reduction of 50-100% in admission and 6 (14.3%) trainees felt that there was no reduction in hospital admissions (Table 11).

Shifting of care on cancer patients using telemedicine

The majority of trainees (81%, 34/42) uses telemedicine for new patients, follow up and monitoring. There were 8 (19%, 8/42) trainees who at the time of responding to the survey were not yet open for teleconsultation. Regarding

Table 10. Impact of pandemic to the training program

35 Did you see a reduction in non-COVID-related outpatient consultations and appointments for you to be involved with at your institution during the pandemic?		
o Yes: There a reduction of 0-50% in non-urgent outpatient appointments	16	38.1%
o Yes: There was a substantial reduction of 50-100% in non-urgent outpatient appointments	14	33.3%
o Yes: Almost all non-urgent outpatient appointments are cancelled	10	23.8%
o No: There was no reduction in outpatient appointments	2	4.8%
36 Did you see a reduction in non-COVID-related inpatient consultations and admissions for you to be involved in at your institution during the pandemic?		
o Yes: There a reduction of 0-50% in inpatient admissions/consultations	22	52.4%
o Yes: There was a substantial reduction of 50-100% in inpatient admissions/consultations	14	33.3%
o No: There was no reduction in inpatient admissions/consultations	6	14.3%

Table 11. Effect of pandemic to non-covid related patients

30 Did you use telehealth (video or phone) visits to care for patients during the pandemic?		
Yes	34	81.0%
No	8	19.0%
31 Did you feel you received adequate training on telehealth?		
No	31	73.8%
Yes	11	26.2%
32 How did telehealth visits affect patient care?		
3	19	45.2%
4	11	26.2%
2	10	23.8%
5	2	4.8%
33 How did telehealth visits affect your development as a healthcare provider?		
1	1	2.4%
2	10	23.8%
3	23	54.8%
4	8	19.0%

the training on telehealth, 73.8% (31/42) of respondents felt that they lack adequate training in dealing with cancer patients using telemedicine and there was a neutral response on how the patients were affected during the shift towards telemedicine. As trainees, their development was neutrally affected by telemedicine, 1 respondent noted to have significant improvement, 23% (10/42) of them had slight improvement, 54.8% (23/42) had moderate improvement but 4 trainees responded that their development as a healthcare provider got worse while using telemedicine (Table 12).

Table 12. Telemedicine

47 I felt burned out from my work.		
A few times a week	12	28.6%
Once a week	10	23.8%
A few times a month	7	16.7%
Once a month or less	5	11.9%
Everyday	5	11.9%
Never	3	7.1%
48 I have become more callous toward people since I took this job.		
A few times a week	17	40.5%
Never	11	26.2%
Once a month or less	6	14.3%
A few times a month	4	9.5%
Everyday	4	9.5%

Impact of caring for patients with COVID-19 on trainee well-being and burnout

A total of 42 respondents provided answers to the questions on burnout. As trainees cared for cancer patients with COVID-19, they were more likely to report symptoms of burn-out majority a few times a week comprising 28.6% (12/42) to once a week 23.8% (10/42). However, 3 (7.1%) never felt burned out from work due to the pandemic.

Table 13. Well-being and burnout

	N	%
Perceived Stress (Median, IQR)		
	43 (30 – 51)	
High	36	85.7%
Moderate	3	7.1%
Low	0	0%
(blank)	3	7.1%
Depression (Median, IQR)		
	9.50 (3.25 – 17.25)	
These ups and downs are considered normal	22	52.4%
Mild mood disturbance	9	21.4%
Borderline clinical depression	8	19.0%
Moderate depression	1	2.4%
Severe depression	1	2.4%
Extreme depression	1	2.4%
Grand Total	42	100.0%

*IQR – Interquartile Range

Trainees become more callous toward people a few times a week (40.5%. 17/42) while 11 (26.2%) were still sensitive to the situation (Table 13).

Depression and stress among trainees during COVID-19 pandemic

Using the perceived stress scale, 85.7% of the trainees (36/42) acknowledged that their stress level was high and 7.1% (3/39) had moderate perceived stress. The median perceived stress score of the trainees was 45 with an interquartile range of 15 to 56 signifying that they have a high level of perceived stress. Using the beck depression inventory II, 21.4% (9/42) of the trainees displayed symptoms of mild depression, 19% (8/42) had borderline clinical depression and 2.4% (1/42) displayed symptoms of moderate depression. Using the recommended cut-off score of 16, the proportion of probable depression was not significant and half of the trainees comprising 52.4% (22/42) are with normal responses and are considered only as ups and downs. However there was one trainee experienced extreme depression and another had severe depression.

DISCUSSION

The Philippines is part of the worldwide pandemic of Coronavirus caused by severe acute respiratory syndrome coronavirus 2. The most affected group facing the pandemic are the health workers and the most vulnerable patients are those immunocompromised patients such as cancer patients. Dealing with such illness plus the fear of facing the pandemic is very challenging since risks and advantages should be weighed as part of their treatment. Trainees handling cancer patients at this time will deal with a lot of dilemmas including their concerns on health and their families' health and high levels of psychological distress. The national survey included questions that spanned a range of relevant topics from workplace safety to well-being, including burnout questions. The survey also revealed that trainees harbored anxiety about acquiring COVID 19 and spreading the infection to family members, friends, co-workers and patients. They are also concerned about the effect of the pandemic on their education and training. This national survey revealed that during the first 9 months of the COVID-19 pandemic, trainees were given access to PPE and RT-PCR test were made available as needed. Concerns about the negative effects of COVID-19 on training and professional development were high irrespective of the level of exposure to patients with COVID-19 since the usual routine was converted to webinars and there was least exposure especially to actual interaction with patients and operative procedures. The training program developed a telemedicine curriculum to be used for their continuity of care to cancer patients and to prevent lapses in their clinical practice. Trainees reported concerns about how the pandemic will affect their preparedness for independent practice due to a widespread change of training curriculum during the pandemic. Residency and fellowship training consists primarily of hands-on training in honing the skills of the trainees and this educational model has been disrupted significantly due to changes such as cancelled clinical rotations, decrease in the number of major elective cases, decreased minor procedure volumes and a transition to telehealth medicine. The survey revealed that changes to training and educational opportunities affected trainees regardless of

their role in the pandemic response, and thus interventions to address training interruptions should target all trainees regardless of the current situation. Trainees are at risk during this pandemic as they serve as both learners and employees. Residents and fellows typically have less control over their schedule and rely on the training program of their institution to facilitate progression towards their career goals.

As Physician trainees, there are a lot of demands at work and in personal life. The pandemic contributed so much to the mental health and well-being of trainees as well as how they handle personal concerns of their patients with cancer. Patients who were diagnosed with cancer are generally affected population since the pandemic started in terms of their monitoring and treatment.

Having been diagnosed with cancer during the time of the pandemic led to many delays in interventions due to changes in protocols and guidelines. During the hype of pandemic in the Philippines, elective surgical cases had to be delay due to certain protocols. Radiation and chemotherapy treatments were limited especially in a government institution and counseling was shifted to telemedicine. These factors led to the vulnerability of trainees' as well as the patients which greatly affected trainees well-being as well as their personal growth in the specialty they are in.

This paper aims to know the impact of COVID 19 on the mental health and well-being of trainees by letting them answer two surveys. First is the perceived stress scale (PSS) which is significant because the trainees' insight of what is happening in his life in relation to the effect of the COVID 19 pandemic will be dissected. Total score can be categorized either in the low-stress category and the second person in the high-stress category. They were asked to answer as soon as they received the survey form voluntarily and anonymously pertaining to their current state of stressfulness on the effect of the pandemic to their training and on their well-being. Most of the respondents perceived stress as very high while overcoming what is expected of them in the training program and at the same time dealing with cancer patients and their dilemmas. The other survey is the beck depression inventory (BDI) which was developed in a novel way for its time of significant use by collating trainees' verbatim descriptions of their symptoms and then using these to structure a scale that could reflect the intensity of how much they are depressed. Trainees were asked to rate how they have been feeling for the past two weeks after they have received the questionnaire in terms of the effect of the pandemic on a possible signs of depression. A majority had ups and downs and are considered normal but there are 2 trainees that had severe and extreme depression. The scores on the following self-

assessment do not mean any particular diagnosis or course of treatment. These survey are meant as a tool to help assess the level of stress of the impact on the trainees.

CONCLUSIONS

Residents and fellows who specialized in cancer are vulnerable during this pandemic as they serve both as learners and employees. They also cater to the vulnerable population since it is known that people with cancer had complicated cases and some with poor outcomes if not treated in a reasonable amount of time. Residents and fellows are dependent on what the training program has to offer for their independent practice to facilitate progression towards their career goals. Awareness of the impact of caring for patients with cancer during the pandemic on trainee safety, health, wellness, education and future preparedness were essential in maintaining the physicians workforce during this pandemic. As medical health provider who treats cancer patients, a holistic approach would be ideal in dealing with the disease itself, patients diagnosed with cancer are defenseless during this time since they are the most affected population of the situation because of the delays in their scheduled procedures and treatment. The burden to these cancer patients will be passed on to their health providers since they are the ones dealing with them medically and emotionally as well. Coping with the situation as trainees while dealing with the dilemmas of a cancer patient in the background of the pandemic would greatly affect its impact on the training, well-being as well as mental health.

LIMITATIONS OF THE STUDY

The study limits questionnaires to those trainees who handle cancer patients only. Opportunistic sampling was used in this study and so there is no guarantee on the generalizability of the findings to all physician trainees. As all questions in the survey were optional, there is also potential response bias affecting the data for each question. However, all results are reported as comparisons between individuals' experience during the first 9 months of the pandemic which are internally consistent. Lastly, due to the study design, there was no baseline measurement of a sense of well-being of trainees prior to the pandemic.

RECOMMENDATION

Larger studies specific to trainees wellness who handles cancer patients during a pandemic may be useful for future research endeavors. ■

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Extrarenal Wilms tumor of the uterus: A case report

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ABSTRACT

Adult extrarenal Wilms tumor (ERWT) of the uterus is an exceedingly rare neoplasm with only 5 reported case in the literature.

A 28-year old female presented with 1-year history of recurrent profuse vaginal bleeding. Preoperative workups including an endometrial biopsy points to malignant neoplasm of the uterus. The patient underwent exploratory laparotomy, peritoneal fluid cytology, extrafascial hysterectomy, bilateral salpingo-oophorectomy, pelvic lymph node dissection, and paraaortic lymph node sampling. Postoperative course was unremarkable.

Diagnostic imaging at 6 months showed no evidence of disease.

The clinical presentation of ERWT of the uterus is nonspecific and usually presents with vaginal bleeding. The diagnosis is based on histology and immunohistochemical staining after resection of the tumor. Management is similar to childhood renal Wilms tumor – complete surgical staging and optional adjuvant chemotherapy and radiotherapy. Patient with early stage disease who underwent complete surgical staging have favorable prognosis with option to observe postoperatively.

Keywords: *extrarenal Wilms Tumor; adult Wilms Tumor; uterine neoplasm; nephroblastoma*

INTRODUCTION

Wilms tumor (WT) or nephroblastoma accounts for 5% of childhood cancer and is the most common primary renal tumor in children, diagnosed at ages 1-5 years, usually presenting as abdominal mass.¹ In adults, WT is extremely rare, with reported incidence of 0.2 per million per year². Adult Extrarenal Wilms Tumor (ERWT) is even rarer, with only 5 reported cases occurring in the uterus among women over the age of 18.³ Aside from reproductive organs, ERWT has been described in case reports in diverse locations, including the retroperitoneum, inguinal canal, mediastinum, chest wall, colon, and adrenal gland.^{4,5} We present a case of adult ERWT of the uterus.

CASE REPORT

A 28-year old Gravida 2 Para 2 (0200), obese class I, with polycystic ovarian syndrome (PCOS), presented with 1-year history of recurrent profuse vaginal bleeding with passage of meaty materials. She consulted with 3 different institutions initially managed as a case of abortion and endometrial polyp for which she underwent endometrial curettage thrice. However, initial biopsies obtained only showed endometrial polyp. The third curettage was interpreted by the pathology at an outside hospital as embryonal rhabdomyosarcoma, sarcoma botryoides; hence, patient was referred to our Cancer Institute. On pelvic examination, a fleshy polypoid mass was visualized

at the cervical os. The case was referred to the Pathology Department at our institution for a second opinion. On slide review and additional immunohistochemical studies with Desmin, Myogenin, MYOD1, and CD10, all showing positive results, the diagnosis was changed to Malignant neoplasm, with the following considerations: 1) low grade adenosarcoma, 2) adenosarcoma with sex cord like elements, 3) adenosarcoma with heterologous differentiation. Further immunostaining was requested, but to conserve the limited funds of the patient, the stains were reserved for the definitive specimen, and the recommendation of the Gynecologic Oncology division was for the patient to undergo surgical staging.

Prior to surgery, transvaginal ultrasound (Figure 1) was done which showed an endometrial mass, consistent with malignancy with almost full thickness myometrial invasion described as solid irregular, heterogenous mass, predominantly hyperechoic with central cystic spaces. Power doppler of the endometrial mass shows minimal scattered vessels without visible origin at the myometrial-endometrial junction (Color Score = 2). On magnetic resonance imaging (Figure 2), the uterine mass was described to be lobulated and heterogeneously enhancing in the right side of the uterine corpus, which appeared to encroach the endometrial cavity. There was no renal mass, hydronephrosis or metastatic disease. The rest of the preoperative laboratory results were within normal limits. Patient underwent exploratory laparotomy, peritoneal fluid cytology, extrafascial hysterectomy, bilateral salpingo-oophorectomy, bilateral pelvic lymph node dissection,

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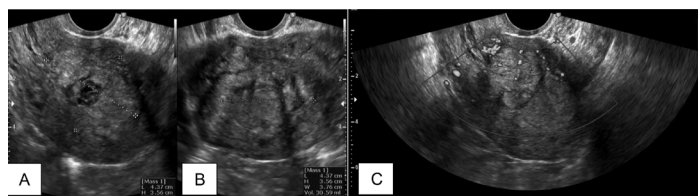


Figure 1: Transvaginal ultrasound AP (A) and transverse (B) views, with Power doppler showing minimal scattered vessels, color score = 2 (C)

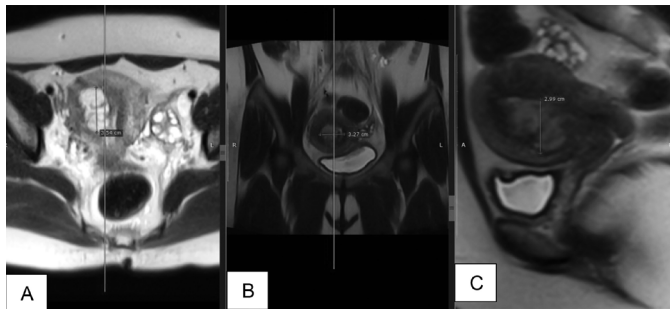


Figure 2: Whole Abdomen MRI with Contrast in (A) axial, (B) coronal, and (C) sagittal views shows a 3.7 x 2.4 cm lobulated and heterogeneously enhancing mass in the right side of the uterine corpus, hyperintense on T2 and isointense on T1 internal septations. The mass appears to encroach the endometrial cavity

and paraaortic lymph node sampling.

Final pathology revealed a 8.0 x 5.0 x 2.5 cm, cream-white, fungating, polypoid, solid, firm endomyometrial mass (Figure 3) centered in the right anterior midcorpus with extension to the rest of the superficial endomyometrium. The non-neoplastic endometrium was proliferative. The mass, at its deepest, invades more than 50% of the myometrium, with presence of lymphovascular space invasion. The most inferior portion of the mass was attached 0.6cm superior to the internal cervical os, with 3.5 cm of the mass was seen prolapsing through the endocervical canal (Figure 3A), but with negative tumor on the cervical stroma. Adenomyosis was present within the myometrium measuring 3 cm anteriorly and 2.5 cm posteriorly. The bilateral parametria, cervicovaginal margin, bilateral fallopian tubes, ovaries, lymph nodes (18 pelvic, 8 paraaortic) and peritoneal washing were all negative for tumor.

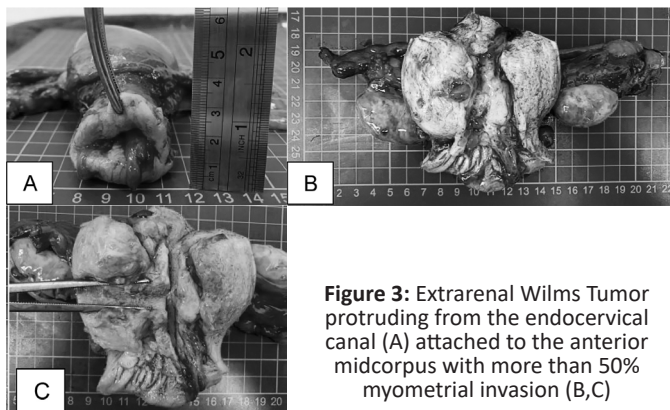


Figure 3: Extrarenal Wilms Tumor protruding from the endocervical canal (A) attached to the anterior midcorpus with more than 50% myometrial invasion (B,C)

Microscopic sections (Figure 4) revealed a biphasic malignant neoplasm composed of epithelial and mesenchymal elements. A panel of immunohistochemistry (IHC) stains (See Appendix A, Table 1) were done showing primitive metanephric (Wilms tumor-like) differentiations, supported by the WT1 positivity (Figure 5) and the focal positivity for CD56 and PAX8, and endodermal differentiation. SALL4 positivity (Figure 5) can be seen in both ERWT and teratoma with metanephric differentiation. Based on the morphologic features, immunophenotype, and the lack of prior history of renal malignancy, the two most likely differential diagnoses were an ERWT with teratoid features or a uterine teratoma with overgrowth of metanephric elements. The

case was read by 9 expert pathologists including 1 pathologist associated with International Society of Gynecologic Pathology; the diagnosis of ERWT was then ultimately rendered.

Postoperatively, the patient had unremarkable course and was observed with monthly follow up. PET CT scan and transvaginal ultrasound done after 6 months showed no evidence of disease. The case was also presented in a multidisciplinary conference involving pathologist, medical oncologist and hematologic oncologist and plan was to defer chemotherapy, given the lack of established regimen, and continue regular clinical examination and yearly PET/CT scan.

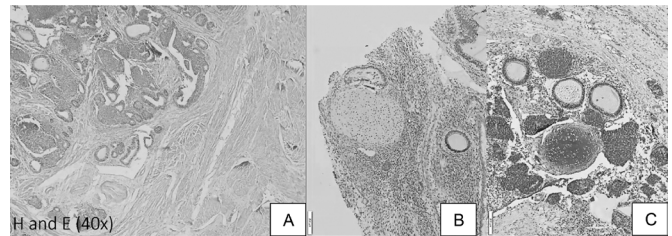


Figure 4: H&E stain at 40x magnification showed biphasic neoplasm with mesenchymal and glandular epithelial-like element (A). Mesenchymal area showed cartilaginous areas admixed with tumor (B, C)

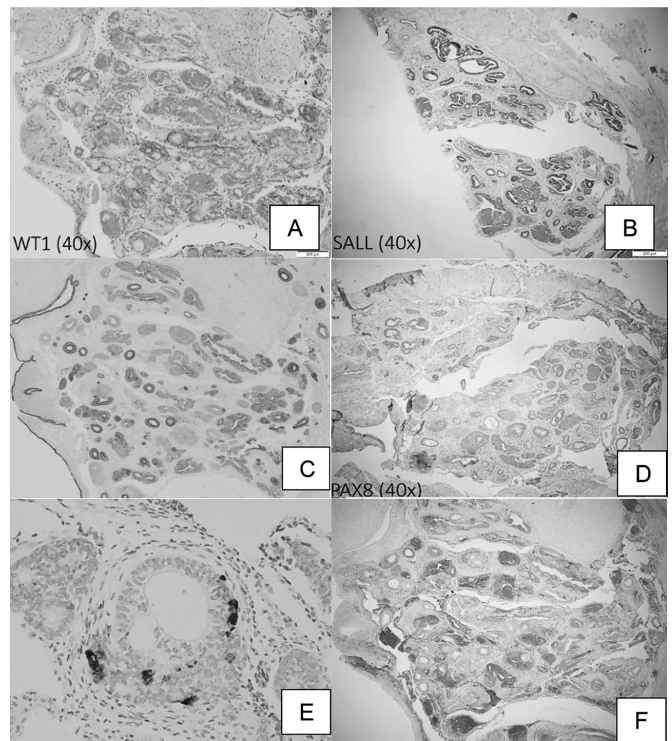


Figure 5: Immunohistochemistry stains showed WT1 positive, focal, moderate to strong nuclear staining in most of the epithelial components, 40x (A); SALL4 positive, focal, strong, nuclear staining in some of the gland-forming epithelial components, 40x (B); Pancytokeratin positive, focal, moderate to strong, cytoplasmic and membranous staining in most of the gland-forming epithelial components and some of the solid-patterned epithelial components, 40x (C); PAX8 positive, focal, moderate, nuclear staining in some of the gland-forming epithelial components, 40x (D) Chromogranin positive, focal, strong cytoplasmic/granular staining in some of the stromal component and at the base of some of the epithelial components, 400x (E); CD56 positive, focal, moderate to strong, membranous staining in most of the epithelial and stromal components, 40x (F)

Table 1. Immunohistochemistry result

	Epithelial (Solid pattern)	Epithelial (Glandular)	Stroma
Synaptophysin	-	-	-
Chromogranin	-	Focal +	Focal +
CD56	Focal +	Focal +	Focal +
Inhibin	-	-	-
Calretinin	-	-	-
GFAP	-	-	-
Pancytokeratin	Focal +		-
EMA	-	Focal +	-
ER	-	-	-
WT1	+	+	-
CD10	-	-	-
AFP	-	Focal +	-
TTF1	-	-	-
SALL4	-	Focal +	-
PAX8	-	Focal +	-

Table provided by the institution pathologist: Dr. Eugene G. Odoño I

DISCUSSION

WT accounts for more than 90% of renal tumors in patients less than 20 years of age.¹ ERWT is a rare entity, with less than a hundred documented cases and reported to occur most commonly within the retroperitoneum.⁵ It was first described by Moyson et al in 1961, with an estimated rate of occurrence outside the kidneys of 0.5 to 1%, occurring mostly among children.⁶ The first reported case of adult ERWT in uterus was in 1993 by Comerchi (Table 2).

Differential Diagnosis and Pathology

There are numerous criteria for the pathologic diagnosis of primary ERWT, one of which is proposed by Babin et al which should include (1) no associated renal tumor, (2) no teratologic elements, (3) no anaplastic features, (4) epithelial cell predominance with primitive tubule and glomeruloid configuration, and (5) primitive blastematos spindle cell stroma. (5) The differential diagnosis of ERWT includes metastatic Wilms tumor, embryonal rhabdomyosarcoma, immature teratoma, and malignant mixed Mullerian tumor (MMMT).⁷ In our patient, metastatic Wilms tumor is excluded by confirming the absence of Wilms tumor in the kidneys as seen in the MRI. Adenosarcoma and carcinosarcoma are less likely because of the negativity of the tumor to estrogen receptor (ER). Moreover, although carcinosarcoma would also exhibit an admixture of malignant epithelial and mesenchymal tissue, with the latter occasionally demonstrating heterologous differentiation, they do not have glomeruloid structures.⁷ A diagnosis of immature teratoma was considered unlikely in our case in view of the absence of primitive neuroepithelial tissue, given the absence of synaptophysin staining and only focal chromogranin and CD56 staining. Sex-cord stromal components are also unlikely because of the absence of staining for inhibin and calretinin.

Pathogenesis

The pathogenesis of ERWT remains unclear. The most widely accepted hypothesis for its origin suggests that persistent nephrogenic rest, or the metanephric blastema, beyond 36th week of gestation could be the precursor for nephroblastoma.⁶ Because of the close relationship between the Mullerian ducts, which fuse to form the uterus, and the mesonephros during embryologic development, it has been postulated that metanephric blastema and portions of the mesonephric duct may be displaced to the

Table 2. Previously reported cases of adult extrarenal Wilms Tumor of the Uterus

Author (year)	Age (yr)	Tumor Characteristic and Size (cm)	Clinical Presentation	Treatment	Follow up
Comerchi et al (1993)	22	confined to polyp (2.2cm)	Prolonged and intermenstrual bleeding for 6 months	TAH	NED for 2.0 years
Jiskoot et al (1999)	77	extension to outer 1/3 myometrium and LUS, size not indicated	Vaginal bleeding	TAH, BSO, XRT	4-5 months
Muc et al (2001)	42	14.5cm	Protruding necrotic mass in vagina; vaginal bleeding	Polypectomy then TAH, BSO, subtotal resection of tumor, RT	Recurrence at 6 months; DOD at 1 year
McAlpine et al (2005)	44	Confined to polyp and focal endometrium (5.0 cm)	Vaginal bleeding	Radical hysterectomy, BSO, pelvic and paraaortic lymph node dissection, omentectomy, appendectomy	NED 1 year
Pinto et al (2018)	33	10.0	Vaginal bleeding	Modified radical hysterectomy, BSO, omentectomy	Lost to follow up
Present study	28	8.0	Vaginal bleeding	Extrafascial hysterectomy, BSO, pelvic and paraaortic lymph node dissection	NED 6 months

Table adapted and modified from A. Pinto et al and McAlpine et al; BSO, bilateral salpingo-oophorectomy; DOD, died of disease; NA, not applicable; NED, no evidence of disease; RT, radiotherapy; TAH, total abdominal hysterectomy

adjacent Mullerian duct and persist postnatally, giving rise to ERWT.^{4,7} The persistent metanephric blastemal cells may then undergo mutation and develop into WT.⁶

Clinical Presentation and Diagnosis

There is no specific clinical manifestation for ERWT, clinical presentation would depend on the location of the tumor. In the case of ERWT of the uterus, all cases (Table 2) presented with profuse vaginal bleeding, including our index case, with one patient presenting with protruding necrotic mass per vagina. Diagnosis is based on histology following surgical removal. Diagnostic imaging such as transvaginal ultrasound, abdominopelvic CT scan or MRI are used to rule out metastasis or primary renal tumor. However, ERWT does not show characteristic radiologic features.⁸

Management

The current shared opinion in the surgical management of patients with ERWT is the surgical removal of the tumor together with the organ it originates from and removal of the adjacent lymph nodes, and are deemed as the most important aspect of the therapy (8) In all the previously reported cases, all patients underwent total abdominal hysterectomy (TAHBSO), except for the case reported by Muc et al⁷, where only polypectomy was initially done with note of recurrence at 6 months, ultimately necessitating hysterectomy. However, the extent of surgical staging varied ranging from TAH alone (Comerci et al) +/- Bilateral salpingo-oophorectomy (BSO), pelvic and paraaortic lymph node dissection⁷, omentectomy^{3,7} and appendectomy⁷.

The authors approached the case similar to any other endometrial cancer, and proceeded with complete surgical staging – extrafascial hysterectomy with BSO, peritoneal fluid cytology, pelvic and paraaortic lymph node sampling – as recommended by the SGOP Clinical Practice Guidelines 2018. This is strengthened by the proposed classification of NWTS (National Wilms' Tumor Study) for ERWT which also uses surgical staging as follows:⁸

Stage 1 – organ-confined tumor, resected completely, no injury to a pseudocyst, clear surgical margin.

Stage 2 – regional tumor, biopsied before removal or invading blood vessels; resected completely, clear surgical margin.

Stage 3 – tumor not completely resected, regional lymph node metastasis present, tumor spread to the abdominal organs and peritoneum.

Stage 4 – hematogenous metastases.

Given the rarity of ERWT of the uterus, and difficulty in applying neither the Wilms Tumor staging or the NWTS ERWT staging, the authors applied the FIGO 2018 staging for endometrial cancer.

Chemotherapy and Radiotherapy

Although there are limited evidence, ERWT is theorized to behave in a similar fashion to classic WT, and should be treated with the same therapeutic approach childhood and renal WT - surgery, chemotherapy and radiotherapy.^{2,8} In the case reports for ERWT of the uterus, only 1 patient received adjuvant chemotherapy. Following the NCCN treatment guidelines for childhood WT, adjuvant chemotherapy should be given in 7-14 days post

operatively. (1) There is currently no standard chemotherapeutic regimen for ERWT of the uterus, following the established pediatric protocols by NCCN and SIOP WT 2001, Vincristine + Actinomycin D +/- Doxorubicin can be used. (1; 9) It is important to note that when receiving treatment as per the standard of care protocols, adults tend to experience worse toxicity from the chemotherapy, which can limit treatment. Notwithstanding these challenges, both the National Wilms' Tumor Study Group (NWTSG) and the Society of Pediatric Oncology (SIOP) groups have demonstrated improved outcomes for adult patients with WT through the strict application of the pediatric protocols, and recommend adjuvant chemotherapy in all patients.^{2,4,9}

Radiation therapy may be given for patients with lymph node involvement, macroscopic peritoneal deposits, preoperative or intraoperative rupture, and when lymph node sampling was not done. (10) It may also be given at 2000–5000 cGy preoperatively for unresectable disease and for recurrent disease.⁴

As for the index patient, final diagnosis was reached 3 months postoperatively, which can be attributed to rarity of the disease, lack of familiarity of the oncologists and pathologist, and financial burden of the different immunohistochemical stains. The patient has no evidence of disease after 6 months postoperatively; hence, taking into consideration the toxicity of an unestablished chemotherapeutic regimen, the final decision of the multidisciplinary teams involving the gynecologic oncologist, medical oncologist, hematologic oncologist, and pathologist is to proceed with observation with clinical examination every 3 months, diagnostic imaging with transvaginal ultrasound every 6 months, and PET/CT scan yearly.

Staging and Prognosis

Five-year survival of pediatric WT is more than 90% with appropriate treatment.¹ However, due to the rarity of ERWT, more so that occurring in adults, data are limited to case reports. Despite the shared histology of adult and pediatric WT, the former is thought to portend a significantly worse prognosis, which could be attributed to adults presenting with more advance stages of disease, including higher frequency of metastases.^{2,7} Most ERWTs have favorable histology, but local recurrence is observed in about 11%.⁶

SUMMARY

The occurrence of ERWT of the uterus in adults is very rare. The clinical presentation is nonspecific and similar to other uterine pathology. The diagnosis is based on histology after resection of the tumor. Management is similar to pediatric WT employing complete surgical staging with or without the option of adjuvant chemotherapy and radiotherapy. The case showed that with good surgical technique and complete resection of tumor, observation is a viable option. ■

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A rare case of primary high grade endometrial stromal sarcoma of the ovary: Challenges in diagnosis and treatment

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ABSTRACT

Primary ovarian endometrial stromal sarcomas (ESS) are extremely rare malignant neoplasms. Their behavior is similar to that of their uterine counterparts, with high grade ESS presenting with a more aggressive clinical behavior and early recurrence. The definitive diagnosis of ESS relies on histopathological findings. Its pathophysiology is still unknown, with some theories linked to endometriosis, and others describing neometaplasia of ovarian stromal cells.

In this report, we are presented with an index case of a postmenopausal woman presenting with abdominal

enlargement of two years. She underwent surgical resection with postoperative diagnosis of primary high grade ESS of the ovary, Stage IC2, with positive lymphovascular space invasion. She presented with recurrence after a year, for which she was treated with adjuvant chemotherapy.

To date, there is still no well established consensus on its optimal treatment, but adjuvant therapy with chemotherapy, radiotherapy or hormonal therapy after surgical resection should be considered.

Keywords: High grade endometrial stromal sarcoma; High grade ESS; Extrauterine ESS; Ovarian ESS

INTRODUCTION

Endometrial stromal tumors (EST) are extremely rare uterine mesenchymal tumors, comprising only 0.2% of all uterine malignancies and 7-25% of uterine sarcomas.¹

Extrauterine ESS has been reported in literature, and may occur in the ovaries, fallopian tubes, broad ligament, vagina, bladder, small bowel, colon, pelvic peritoneum, mesentery, and liver.² In 2013, Masand *et al.* reported the largest series of extrauterine ESS of up to 63 cases, with ovarian involvement found in 25 patients. Patients' age ranged from 34 to 76 years with a median age around 50 years (perimenopausal / postmenopausal). The clinical presentation is non-specific, and is often related to tumor location and size. When symptomatic, they may present with chronic vaginal bleeding, pelvic pain or dysmenorrhea.³

The diagnosis and treatment of ESS of the ovary remains a challenge. Diagnosis is clinched histopathologically, and the standard of treatment is still not well studied due to the rarity of cases.

In this report, we present a case of high grade ESS of the ovary in a postmenopausal patient who, despite surgery and adjuvant treatment with chemotherapy, has shown recurrence and progression of disease. Though the options of management have remained a challenge, the patient continues to be on close follow up, monitoring and on continued sessions of palliative chemotherapy.

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CASE PRESENTATION

This is a case of a 58 year old, Gravida 4 Para 4 (4003), married, from Caloocan City who presented with rapidly enlarging abdomen of two years.

She is a known hypertensive with good compliance to maintenance medications. Her family history is pertinent only for renal disease in one of her siblings. She is a high school graduate and works as a market vendor. She has no vices.

She had her first coitus at 18 years old, with one non-promiscuous sexual partner. She had history of oral contraceptive pill use in 1990.

She had her menarche at 11 years old. Her menses occurred regularly monthly until she had her menopause at 51 years. She did not experience dysmenorrhea all throughout.

She is a Gravida 4 Para 4 (4003), with all pregnancies delivered vaginally and with no complications. Her first baby died at the age of 1 year-old from diphtheria.

Her illness started in September 2019, two years prior to consult, when she noted rapidly enlarging abdomen, associated with bloatedness. There were no palpable masses at this time. She consulted a private physician, who advised her to have a transvaginal ultrasound done. The findings showed an abdominopelvic mass, consider subserous myoma uteri with probable cystic degeneration, cannot totally rule out malignant degeneration. The mass was described to be irregular, multilobulated and heterogenous, measuring 20.5 x 15.0 x 11.5 cm with cystic spaces within. The mass was seemingly attached to the posterior uterine wall. Both ovaries were not visualized.

The patient was advised surgery and subsequently underwent preoperative cystoscopy, bilateral ureteral stenting, exploratory laparotomy, peritoneal fluid cytology, total hysterectomy with bilateral salpingo-oophorectomy, infracolic omentectomy, lymph node assessment, JP Drain insertion.

Intraoperatively, there was bloody ascites upon opening the peritoneum. The liver, gallbladder, subdiaphragmatic

surface, stomach, spleen, kidneys, intestines, mesentery, appendix were all smooth and grossly normal. The left ovary was seen posterior to the uterus, impacted at the cul de sac and adherent to the rectosigmoid area. It was converted to a 23 x 15 x 12 cm predominantly solid mass with areas of hemorrhage on cut section. There was preoperative rupture at the anterior surface, measuring approximately 1 cm (Figures 1a and 1b).



Figure 1: Left Ovarian Mass with 1 cm point of rupture (arrow)

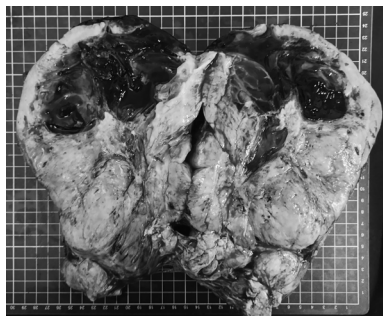


Figure 1b: Left Ovarian mass (cut-section)

The left fallopian tube and the right adnexa were all grossly normal (Figures 2a and 2b). The uterus was smooth with tan serosal surface. On cut section of the uterus, a smooth, fleshy, polypoid mass measuring 6 x 2 x 2 cm was seen attached to the anterofundal area (Figure 3). The pelvic and paraaortic area had no palpable lymph nodes. The omentum was grossly normal.

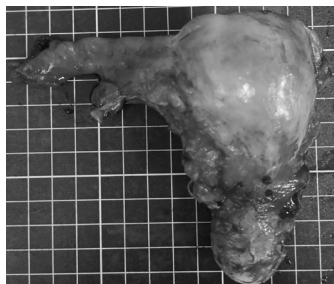


Figure 2a. Uterus with right adnexa (anterior view)



Figure 2b. Uterus with right adnexa (posterior view)



Figure 3. Figure 3. Cut section of the uterus and the endometrial mass (arrow)

The postoperative diagnosis was a left ovarian new growth, malignant, intraoperative Stage IC2 and an endometrial polyp.

The histopathologic report described a poorly differentiated malignancy of the left ovary, 21 centimeters in greatest tumor dimension, with positive lymphovascular space

invasion. Microscopic findings described predominantly sheet-like morphology comprised of monomorphic round tumor cells with increased mitoses and presence of mitotic figures (Figures 4a – 4d). All other specimens that were sampled were negative for tumor. Immunohistochemical stains (IHC) were done for further evaluation. CD10 (Figure 5) and vimentin were both positive in the cells of interest, while caldesmon only had focal weak positivity. The rest of the immunohistochemical (IHC) stains were negative in cells of interest (CK AE1/AE3, CAM5.2, LCA, S100, PLAP, SALL5, Inhibin, Desmin, ER and PR). Ki67 showed proliferative index of 3-4%.



Figure 4a. This is a scanning magnification taken from the ovarian tumor. The tumor has replaced ovarian parenchyma and shows an expansile solid growth rimmed by paraovarian soft tissue

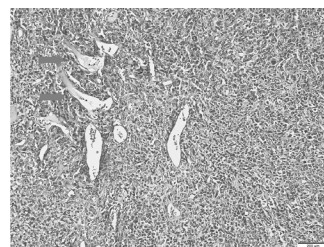


Figure 4b. This low power magnification view shows a predominantly sheet-like morphology comprised by fairly monomorphic round tumor cells punctuated by occasional dilated or ectatic thin-walled blood vessels (arrows)

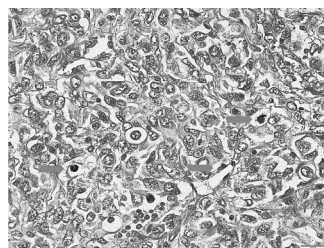


Figure 4c. Higher magnification shows round tumor cells with mild to moderate nuclear pleomorphism and anisonucleosis. Mitotic figures (arrows) are present in this single field and this tumor shows increased mitoses of up to 18/10 hpf. The cytoplasm is eosinophilic and syncytial

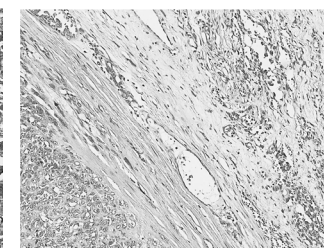


Figure 4d. Lymphovascular space invasion is demonstrated by the small tumor plugs within several lymphatic channels and capillaries

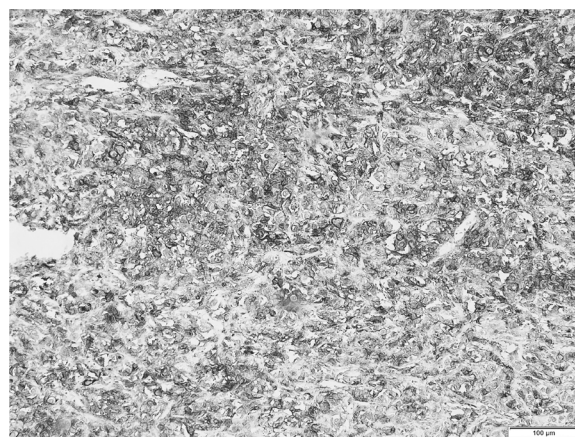


Figure 5. A focus of the tumor showing patchy CD10 expression in the cell membrane

Other non-malignant findings showed a pedunculated endometrial mass, which revealed an endometrial polyp on several cut sections. It was comprised of dilated endometrial glands set in a benign fibrous and endometrial-type stroma (Figure 6).

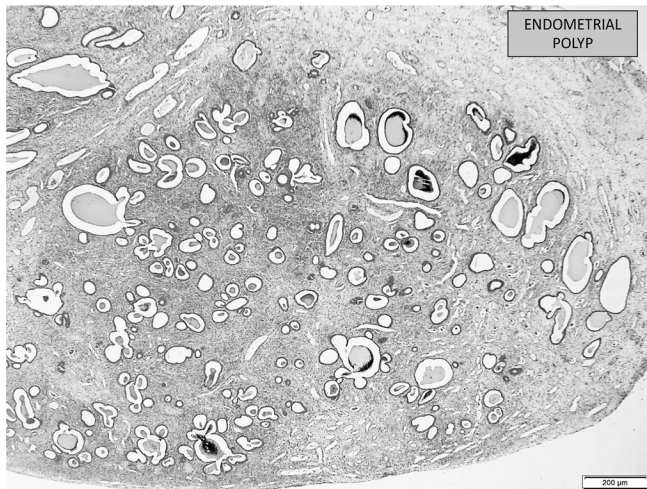


Figure 6. This lower power magnification view of a pedunculated endometrial mass on several sections reveals an endometrial polyp, comprised by dilated endometrial glands set in a benign fibrous and endometrial-type stroma

Given the results of the IHCs, the final histopathologic diagnosis was compatible with a high grade endometrial stromal sarcoma. The patient was advised to undergo systemic chemotherapy; however, she was lost to follow up for over a year.

One month prior to consult, the patient felt a feeling of bloatedness. She consulted with a private physician who requested for diagnostic imaging studies. Transvaginal ultrasound showed pelvic masses consider tumor recurrence, while a CT scan of the chest and abdomen showed several bilateral pulmonary nodules (largest 2.3 x 3.6 cm) worrisome for metastasis, and several abdominopelvic partially necrotic masses, consider tumor. Given the findings compatible with tumor recurrence to the lungs and pelvis, the patient underwent chemotherapy with two cycles of Gemcitabine and Docetaxel combination chemotherapy. On a repeat chest and abdominopelvic CT scan, several pulmonary nodules and masses were noted, the largest of which measured 12.7 x 11.0 x 10.3 cm. An abdominopelvic mass measuring 18.5 x 18.2 x 15.6 cm was also seen compressing adjacent bowel segments. Mediastinal lymphadenopathy, abdominopelvic and bilateral iliac chain lymphadenopathy were also noted suspicious for metastasis. Due to disease progression, patient was shifted to Ifosfamide and Paclitaxel regimen and is currently on her third chemotherapy cycle.

CASE DISCUSSION

The updated 2020 WHO classification of uterine mesenchymal tumors divides ESTs into four categories, namely (1) endometrial stromal nodule, (2) low-grade endometrial stromal sarcomas (LG-ESS), (3) high-grade endometrial stromal sarcomas (HG-ESS), and (4) undifferentiated stromal sarcomas. Each subgroup varies in histopathological,

immunohistochemical and molecular features. High grade ESS displays round cell morphology with high mitotic rate within.⁴ These tumors tend to be more aggressive clinically and frequently present with extrauterine disease at initial presentation.¹ Immunohistochemistry stains are positive for Cyclin D1, BCOR, CD117 (c-kit), CD56, and CD99, while DOG1 is negative. ER and PR are generally negative, but positive staining has also been reported.⁴ The cytogenetic hallmark of such tumors is the balanced translocation of t(10;17)(q22;p13) rearrangement with YWHAE- NUTM2A/B gene fusion.¹

Due to limited reports on ovarian ESS, there is very limited data explaining its pathophysiology. One theory suggests the development of ESS from a focus of endometriosis. Malignant transformation in endometriosis is considered to be an unusual event, only occurring in 0.1-0.7 % of cases. Most malignant tumors that have been found to originate from endometriosis are endometrioid adenocarcinoma and clear cell types; and endometrial stromal sarcoma is an extremely unusual type.²

The behavior of primary ovarian ESS is similar to that of its uterine counterpart, with tumor differentiation conferring greatest prognostic significance. Low-grade ESS is an indolent tumor with a propensity for late recurrences, whereas high-grade ESS is an aggressive tumor with early recurrences and poorer outcomes.⁶

The index patient was postmenopausal and presented with abdominal enlargement. She had no evidence of endometriosis on history, on intraoperative findings, and even on histopathological report. According to Kim et al. in 2009, for cases that have not been found to be associated with endometriosis, it is possible that ovarian ESS may arise directly from ovarian stromal cells that have undergone neometaplasia into endometrial stromal-type cells.⁷ Further data and studies on these are still lacking.

Primary ovarian ESS usually presents unilaterally; When seen bilaterally, metastasis from an otherwise primary uterine ESS should be ruled out. Hence, the status of the uterus must be fully evaluated before arriving at the diagnosis of a primary ovarian ESS.⁶ The definitive diagnosis of ESS ultimately relies on histopathological findings.

On gross appearance, they tend to be large with a solid or solid and cystic tan-yellow cut surface. In a minority of cases, they may be seen to be predominantly cystic. On microscopic examination, sheets of uniform small oval cells are seen resembling the normal stromal cells of proliferative endometrium, and may show tumor necrosis and high mitotic activity.⁸

As for the immunohistostains, while it is now widely accepted that diffuse CD10 immunoreactivity is a positive predictive marker of ESS, evaluating CD10 immunoreactivity alone is often not helpful to differentiate ESS from other similar appearing tumors. Characteristic immunohistochemical features of ESS include diffuse strong reactivity for vimentin and patchy strong staining for CD10 in about 50% of cells. Due to focal smooth muscle differentiation, they may also stain positive for caldesmon.

Nonreactivity to antibodies against CD117, smooth muscle actin (SMA) and cytokeratin (CK) has also been described. With regard to the progesterone receptor, while ESS show high sensitivity to antibodies against this antigen, this immunostain is less specific for differentiating ESS from other mesenchymal tumors. A panel of immunohistochemical stains that comprise

CD10, estrogen receptor and CD34 may be more helpful for diagnosing extrauterine extraovarian ESS.

Given the available immunohistostains in our institution, Table 1 shows the stains that stained positive and negative for the cells of interest for the index case. The same table also lists the corresponding counterparts and differentials that could be ruled out from the nonreactivity of the particular stains used.

Table 1. Patient's Immunohistostains

Date Taken		Interpretation
Positive in interest	CD 10	Compatible with high cells of grade endometrial stromal sarcoma
	Vimentin	
	Caldesmon (focal weak positivity)	
Negative in cells of interest	CK AE1/AE3 CAM 5.2	Epithelial carcinomas Glandular epithelium
	LCA	Lymphoma
	S100	Melanoma, Sex cord stromal tumors
	PLAP	Germ cell tumors
	SALL5	Germ cell tumors
	Inhibin	Sex cord stromal tumors
	Desmin	Leiomyoma
	Cyclin D1	Epithelial carcinoma

It has been reported that tumor markers such as CA125 could be less sensitive in these tumors than in epithelial ovarian cancers. A study by Xie et al. in 2017 reported that serum CA125 level was only increased in 6 out of 13 tumors evaluated. In addition, 4 of the 6 tumors with elevated CA125 level had endometriosis, making the interpretation of the CA125 value confusing. In this patient, the CA125 was monitored only post operatively and was noted to be elevated prior to initiation of the first cycle of chemotherapy. Initially, monitored values showed decreasing trends after continued chemotherapy. An increase after the last chemotherapy session suggested progression of the cancer. Thus, CA 125, though not very sensitive for high grade ESS of the ovary, could still play a role in monitoring a patient's response to treatment and in guiding the oncologist with continuation or shifting of treatment regimen (Table 2).

Table 2. CA125 Values of Index Patient during her chemotherapy sessions

Date Taken	Value (U/mL)	Value (U/mL)
12/18/2020	122.18	Pre Chemotherapy
5/19/2021	85.1	Post Gemcitabine-Docetaxel II
7/11/2021	27.0	Post Ifosfamide-Paclitaxel I
8/10/2021	24.8	Post Ifosfamide-Paclitaxel II

While the standard of treatment for uterine ESS is extrafascial hysterectomy with or without bilateral salpingo-oophorectomy, the treatment of extrauterine ESS remains controversial. In the absence of data, it seems reasonable

to adapt surgical resection as the mainstay of treatment for primary ovarian ESS. Primary surgery for early disease includes hysterectomy and bilateral salpingo-oophorectomy, while tumor debulking is reserved for advanced-stage disease. The role of systemic lymphadenectomy is still elusive. Lymph node metastasis can occur in uterine endometrial stromal sarcomas at a rate of 2 – 45%; however, lymphadenectomy does not seem to improve survival. The rate of lymph node metastasis in primary ovarian ESS is unknown owing to the rarity of these tumors.⁶

Postoperative adjuvant therapies still have an unclear role for ovarian ESS. Treatment with radiotherapy, chemotherapy and hormonal therapy have been used in its management but the optimal choice of adjuvant therapy is still unknown. Radiotherapy has been thought to reduce postoperative pelvic recurrence but does not appear to affect overall survival, which may be related to extrapelvic metastasis.

Commonly used adjuvant chemotherapy for recurrent and advanced stages are the following: Gemcitabine combined with docetaxel (most widely used), Doxorubicin combined with Ifosfamide, Doxorubicin combined with Dacarbazine and Gemcitabine combined with Dacarbazine. The index patient was treated with two cycles of gemcitabine combined with docetaxel; However, tumor progression was noted while ongoing treatment. Though CA125 values seemed to be decreasing, new metastasis were documented on monitoring with imaging studies. She was later on shifted to Ifosfamide and Paclitaxel regimen, and has already completed two cycles. While on the second cycle, she developed signs of encephalopathy and chemotherapy-induced cardiomyopathy. Further work up showed new lesions suggestive of brain metastasis, implying disease progression despite the second-line adjuvant chemotherapy. To date, it is still not known which chemotherapy regimen is most effective for such cases.

Hormonal therapy has also been used for steroid receptor positive advanced that are radio- and chemotherapy-resistant. Progestins are used as first line treatment and aromatase inhibitors seem to be equally effective.⁹ However, since the index patient's tumor was negative for ER and PR receptors, these may not offer any benefit.

The role of molecular targeted therapies in endometrial stromal sarcomas remains to be established. In the largest series investigating potential targets for tyrosine kinase inhibitors (TKI), immunohistochemical or molecular alterations of c-Kit, PDGFR α and EGFR were demonstrated in 2%, 34.6% and 11.5% of ESSs, and in 7.7%, 38.5% and 7.7% of non-LG-EESs, respectively.⁹

The prognosis of primary ovarian ESS is similar to that of their uterine counterparts. Highgrade ESS is an aggressive tumor with early recurrences and poor outcomes. The recurrence and death rates of high-grade ESS were 80% and 40%, respectively. Compared with low-grade ESS, patients with high-grade ESS were less likely to respond to the salvage systemic therapy.

The index case presented with a two-year history of rapidly enlarging abdomen. Although early stage, the histology was that of a high grade ESS, positive for lymphovascular space invasion. The nature of the tumor, in itself, had already been aggressive at the onset. With the patient refusing further treatment and being lost to follow up for over a year immediately after her surgery, her condition rapidly progressed.

CONCLUSION

Primary ovarian ESS are extremely rare malignant neoplasms and accurate histologic diagnosis should be made. With high-grade ESS being aggressive tumors with early

recurrences and poor outcomes, giving adjuvant treatment should not be delayed. To date, there is still no well established consensus on its optimal treatment, but we should always consider the value of adjuvant therapy after surgical resection and close follow up of patients. ■

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Double primary malignancy of cervix and appendix - the rare co-passe

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ABSTRACT

Multiple primary malignancies can occur in the same organ or multiple organs. Likewise, they can occur simultaneously or successively. Multiple primary tumors are rare, and their management can be challenging. The occurrence of cervical and appendiceal carcinoma has not been previously reported in our local setting.

This is a case of a 42-year-old, G3P3 (3003) with cervical cancer who presented with abnormal vaginal bleeding. Pelvic examination showed a bulky- sized cervix measuring 6 x 5 cm extending to the upper third of the vagina circumferentially, corpus was small, no adnexal mass or tenderness with free bilateral parametria. She was diagnosed to have squamous cell carcinoma, non- keratinizing, of the cervix, stage IIA2 and had neoadjuvant chemotherapy using Cisplatin-Paclitaxel. After 4 cycles of Cisplatin-Paclitaxel, surgery was done and Intraoperative findings revealed the uterus was small, the bilateral ovaries were cystically enlarged and the appendix was densely adherent to the right ovary, and there were also 2 solid omental masses, largest measuring 3.0 x 2.5 x 1.0 cm. Disseminated cervical

cancer was considered hence the plan for radical hysterectomy was abandoned. Bilateral salpingo-oophorectomy, infracolic omentectomy, and appendectomy were done instead. The final histopathologic report of the appendix, ovaries and omentum revealed Mucinous Adenocarcinoma, well-differentiated, Appendix IVA, involving bilateral ovaries and omentum. Hence, the patient was diagnosed to have a double primary disease.

The patient had systemic chemotherapy with capecitabine 1000mg/m² BID + oxaliplatin 130 mg/m² for 2 cycles for the primary appendiceal carcinoma. Eventually, the patient had to start concurrent pelvic external beam radiation with capecitabine due to recurrent vaginal bleeding and enlarging cervical mass.

Here we present one such interesting case of two different biopsy-proven malignancies treated with a dual-target approach that may hopefully lead to good treatment response and this highlights the importance of a wide spectrum of clinical knowledge and skill and interdisciplinary coordination.

Keywords: Appendiceal Cancer, Cervical cancer, Multiple Primary Cancer

INTRODUCTION

Cases of Multiple primary malignancies were initially described by Billroth¹ in 1889 and later defined by Warren and Gates² as the presence of at least 2 unrelated primary malignancies in a single patient. Occurrence of multiple primary tumors are rare and discussed mostly on case reports. The incidence rate for multiple primary malignant neoplasms (MPMNs) is estimated to be between 0.73 and 11.7%.³ It is important to differentiate primary malignancies from metastatic disease as there is great variation in overall survival and management. This differentiation is important for proper treatment strategy, especially in terms of staging, type of surgery, chemotherapy to be given, and the eventual prognosis. Resolving this dilemma has been difficult, prompting many clinicians to describe many molecular tests for resolution.

However, there is no consensus on the best method to achieve this.

Cancer of the cervix is the fourth most common cancer among women worldwide and the fourth leading cause of cancer death, with an estimated 604,000 new cases and 342,000 deaths worldwide in 2020,⁴ and it ranks second as the most frequent cancer in the Philippines.⁵ Mortality rate has decreased over the last several decades, most likely due to preventive efforts and early detection. Meanwhile, cancers of the appendix are extremely rare. Appendiceal mucinous neoplasms comprise 0.2% to 0.3% of appendectomy specimens. Affecting men and women equally, the average age of onset is between 50 and 55 years. Clinical presentation can be appendicitis, a hernia with mucin, an abdominal/pelvic mass, or an incidental finding on an imaging study or during a surgical procedure for an unrelated indication. In women, these tumors often spread to the ovaries and may easily be confused with ovarian cancer.⁷ Tumor markers of appendiceal mucinous adenocarcinoma can be elevated, such as CA125, CA199, and CEA.

Although Cervical cancer is one of the most common cancers in females (Figure 1), yet a coexisting primary carcinoma involving the appendix in a single patient is a rarity in literature. To our knowledge, this constellation of tumors has never been reported in the local literature, however an international case report was published in 2006, in a 57-year-old woman with a simultaneous occurrence of cervical cancer, mucinous

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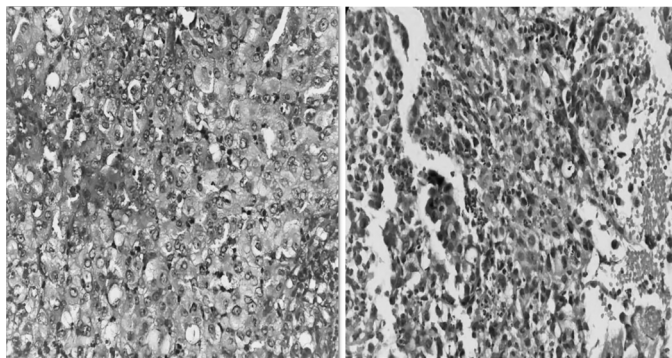


Figure 1. Review of Slides: Squamous Cell carcinoma, non-keratinizing for both cervical and endometrial tissues

adenocarcinoma of the appendix and renal carcinoma.⁸ Most of the available data on natural history of multiple primary malignant tumors are derived from case reports and small case series.

CASE REPORT

A case of a 42 year-old G3P3 (3003), Filipino, single, consulted due to heavy vaginal bleeding and passage of blood clots. This was associated with hypogastric pain. Past medical history and family history are non-contributory. The patient is a non-smoker and non-alcoholic beverage drinker with no history of illicit drug use. She was regularly menstruating since 13 years old, lasting for 5-7 days consuming 2 pads per day, moderately soaked with dysmenorrhea. Her first coitus was at 21 years old with 2 sexual partners with unknown promiscuity. She has no history of oral contraceptive use. First and only pap smear done in 2015 and was normal. She had 3 full-term pregnancies, first delivery was at 28 years old, all were carried to term, delivered by normal spontaneous delivery with no fetal and maternal complications.

Two months prior to consult, patient had vaginal bleeding with passage of blood clots, consuming 2 baby diapers per day. This was associated with hypogastric pain, with a pain scale of 5/10. The patient had no complaints pertaining to gastrointestinal symptoms. She sought consult with a gynecologist where transvaginal ultrasound showed thickened endometrium measuring 0.52 cm with an echogenic nodule within, measuring 0.96 x 0.40 x 0.87 cm with the consideration of endometrial polyp. The cervix measured 4.29 x 3.45 x 2.86 cm and contained a solid mass with heterogeneous echo pattern measuring 3.74 x 3.29 x 2.59 cm, probably a cervical myoma. Both ovaries were normal. She was advised surgery, but opted to seek a second opinion where repeat ultrasound with Doppler revealed a cervical mass measuring 4.1 x 3.0 x 2.3 cm, protruding out of the vagina exhibiting intense color flow, seemingly attached to the posterior lip of the cervix. Endometrial and cervical punch biopsy revealed adenocarcinoma and squamous cell carcinoma, non-keratinizing, respectively. Whole abdominal MRI revealed a cervical mass measuring 3.1 x 3.4 x 3.9 cm with extension to the posterior vaginal fornix. No distinct parametrial or endocervical canal extension noted. Normal ovaries. The liver, gallbladder, spleen, pancreas, were unremarkable. There was no discrete mass seen in the stomach, small and large bowels and rectum. No discrete enlarged lymph nodes in the mesentery, retroperitoneum, pelvic and inguinal regions. The bones and

abdominal soft tissues are unremarkable. She was then advised to transfer to our institution for surgical management.

Upon assessment, the patient was ECOG 0, BMI of 29.0 kg/m² and had normal abdominal PE findings. Internal examination showed a nodular cervix measuring 6 x 5 cm extending to the upper third of the vagina, corpus was small, no adnexal mass or tenderness with free bilateral parametria. Review of slides of both cervix and endometrial tissue done at our institution showed squamous cell carcinoma, non-keratinizing. The patient was staged based on FIGO 2018 staging for cervical cancer as stage IIA2, since the tumor is clinically visible and measures ≥ 4 centimeters in the greatest dimension and is limited to the upper two thirds of the vagina without parametrial invasion. She consented to participate in an ongoing prospective study analyzing the role of neoadjuvant chemotherapy for cervical cancer stages IB3 and IIA2. In this study, patients will have neoadjuvant chemotherapy using Cisplatin-Paclitaxel for 3-4 cycles prior to possible radical hysterectomy.

Serial pelvic examination and imaging were done while on neoadjuvant treatment. Baseline pelvic MRI was done prior to her first cycle of chemotherapy, which revealed a lobulated, homogeneously enhancing cervical mass measuring 4.9 x 4.5 x 6.1 cm causing poor definition of cervical walls with subsequent mass effect pushing the urinary bladder anteriorly and the adjacent sigmoid colon posteriorly. A lymph node is noted in the left parametrial region measuring 1.7 cm. There were multiple cystic foci seen in both adnexal region, largest on the left side measuring 3.1 cm and 1.2 cm at the right and polycystic ovaries were considered. And irregular wall thickening is seen at the urinary bladder which maybe secondary to cystitis or underfilled state.

After her third cycle of Cisplatin-Paclitaxel, another pelvic MRI was done which revealed regression of the lobulated homogeneously enhancing cervical mass, now, measuring 4.3 x 3.3 x 5.1 cm, however there was progression in the left parametrial lymph node measuring 2.3 cm previously 1.7 cm and the size of the adnexal mass remain unchanged. Abdominopelvic exam at this time, showed flabby abdomen with no mass or tenderness, cervix measures 4 x 4 cm, smooth, with 3 x 3 cm endocervical mass attached at 6 o'clock position, corpus is small, no mass or tenderness noted on adnexa and bilateral parametrium is free however shortened on the right. Proceeded with radical hysterectomy, bilateral salpingo-oophorectomy, bilateral lymph node dissection and paraaortic lymph node sampling. Intraoperatively, there was no ascitic fluid noted. The surfaces of the ascending colon, right paracolic gutter, peritoneum overlying the right kidney, liver edge, subdiaphragmatic surface, stomach, spleen, peritoneum overlying the left kidney, descending colon, left paracolic gutter were all smooth. There were no palpable pelvic and paraaortic lymph nodes. However, there were 2 solid omental masses noted, the largest measuring 3.0 x 2.5 x 1.0 cm (Figure 3). On cut section, they were solid with yellow to cream surface. The right and left ovaries were cystically enlarged, measuring 5.0 x 3.5 x 2.5 cm and 5.5 x 4.0 x 2.5 cm (Figure 2), respectively. On cut section, both exuded thick clear fluid. The capsules were thick walled with cystic and solid areas measuring 1 x 1 cm. The appendix was densely adherent to the right ovary, with a 1 x 1 cm solid mass (Figure 4) on its distal area. The uterus was small and not adherent to the adjacent organs but with 1 x 1 cm solid mass at the rectum. The plan for radical hysterectomy

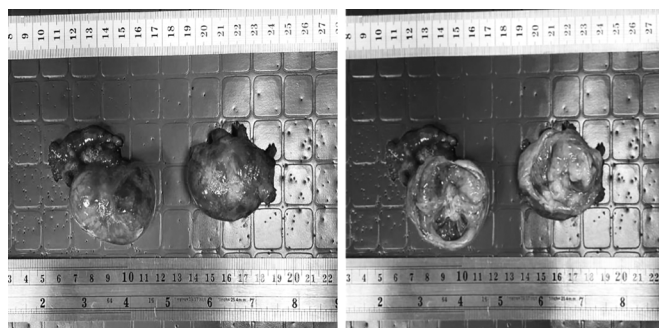


Figure 2. Bilateral ovaries: (+) cystically enlarged right and left ovaries (5.0 x 3.5 x 2.5 cm and 5.5 x 4.0 x 2.5 cm)

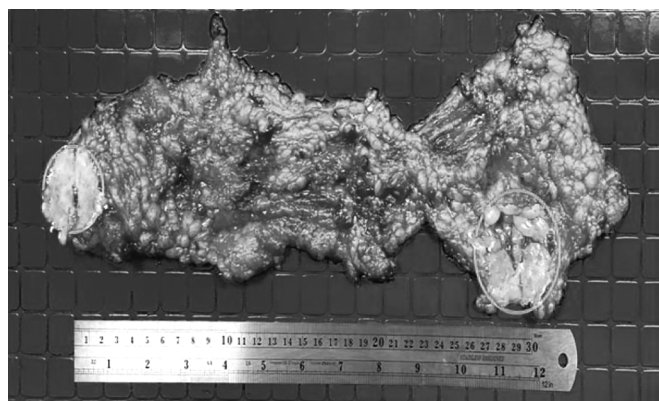


Figure 3. Omentum with 2 solid omental masses, largest measuring 3.0 x 2.5 x 1.0 cm



Figure 4. Appendix: (+) 1 x 1 cm solid mass on the distal end of the appendix

was abandoned and the patient underwent bilateral salpingo-oophorectomy, infracolic omentectomy and appendectomy instead. Post-operatively, CA-125 was elevated at 58.95 U/ml and CEA was normal at 1.38 ng/ml. Final histopathologic report revealed mucinous adenocarcinoma of the appendix, well differentiated, involving bilateral ovaries and omentum. (Figures 5a and 5b), (Figures 6a and 6b) and (Figures 7a and 7b)

The ovarian masses and appendix were both submitted for IHC which showed CK7 and CK20 positive (Figures 8 and 9), consistent with Mucinous adenocarcinoma of appendiceal origin. Hence, patient was diagnosed to have double primary disease. The management of each malignancy was discussed in a multidisciplinary conference, and it was agreed by the colorectal and pathology service to stage the primary appendiceal carcinoma as stage IVA since it has spread to other areas of the abdomen such as the omentum. The consensus of the tumor board were the to complete the work-up using

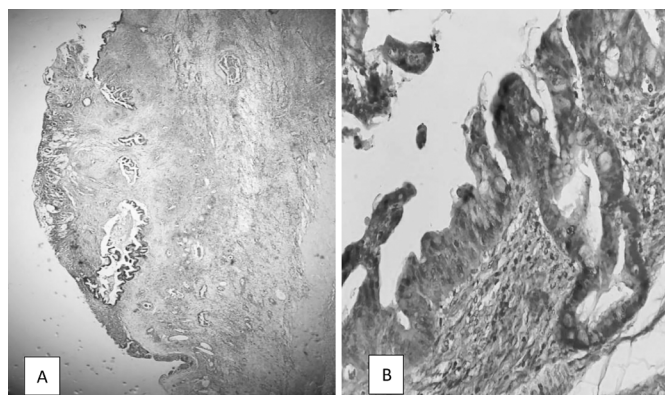


Figure 5. Right Ovary: A (scanner view) B: (High power magnification) Presence of mucinous glands infiltrating the surface epithelium extending to the ovarian cortex

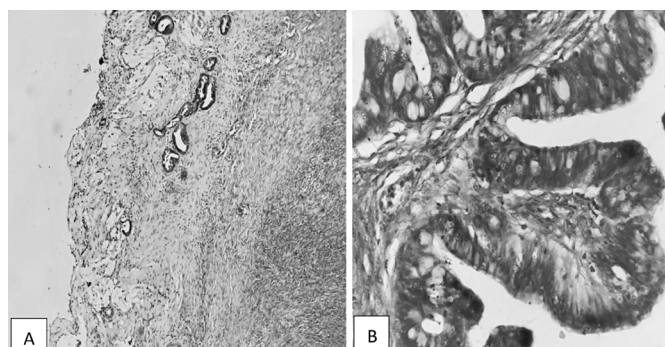


Figure 6. Left Ovary: A (scanner view) B: (High power magnification) Presence of mucinous glands infiltrating the surface epithelium extending to the ovarian cortex

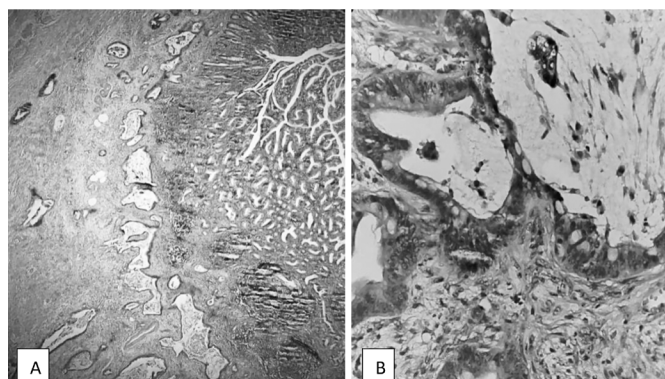


Figure 7. Appendix: A: (Scanner view) B: (High power view) Proliferation of transitional glands in the mucosa with irregular glands invading the lamina propria with presence of extracellular mucin

imaging to note for nodal metastasis and carcinomatosis, to do colonoscopy to detect synchronous tumors, and to do a hemicolectomy as long as there is no peritoneal dissemination of the carcinoma on imaging whereas a systemic chemotherapy will be beneficial if there is carcinomatosis. It was also a common decision to prioritized treatment of the appendiceal carcinoma since it has the highest staging.

Whole abdominal CT scan showed an enlarged hypodense cervix measuring 5.0 x 4.5 cm, endometrial fluid or thickening, early omental carcinomatosis, neoplastic extension in the sigmoid colon and a 1.4 cm right internal iliac node probably metastasis. Chest Ct scan and colonoscopy were unremarkable.

In view of the whole abdominal CT scan and colonoscopy result, the plan is to give Capecitabine 1000 mg/m² BID + Oxaliplatin 130 mg/m² every 21 days for 6 months for the

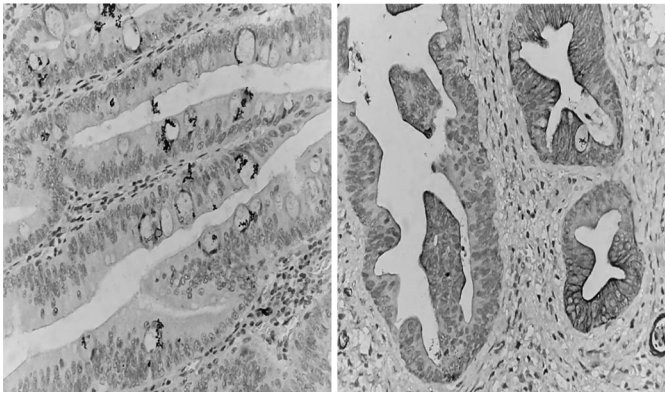


Figure 8. Immunohistomorphologic features consistent with Mucinous Adenocarcinoma of Appendiceal Origin (Focally positive for CK 7)

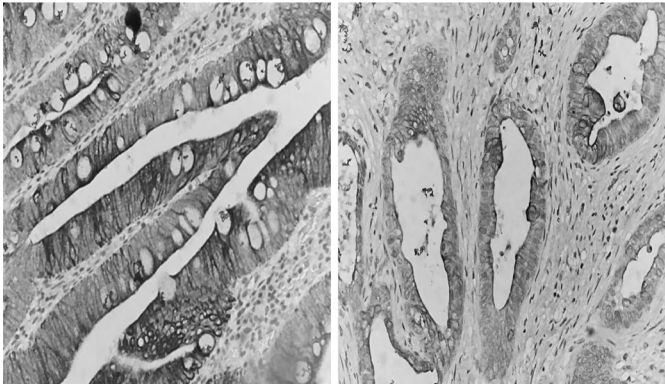


Figure 9. Immunohistomorphologic features consistent with Mucinous Adenocarcinoma of Appendiceal Origin (Diffusely positive for CK 20)

mucinous adenocarcinoma of the appendix, and to reassess patient after completion of chemotherapy whether a hemicolectomy will be warranted prior to giving concurrent chemoradiotherapy for the cervical cancer. However, patient complained of intermittent vaginal spotting on her second cycle of Oxaliplatin-Capecitabine, and on pelvic examination, the cervical mass appeared to have increased in size, from her previous pelvic examination after the first cycle of Oxaliplatin-Capecitabine, cervix then measured 4 x 4 cm, smooth, with 3 x 3 cm endocervical mass attached at 6 o'clock position. And after the second cycle, the cervix was effaced, smooth, and a 5 x 5 cm endocervical mass was noted, which obviously had an increased in size. The corpus was small, no mass or tenderness was palpated on adnexa. The bilateral parametria remained free, however shortened on the right. Her case was referred back to multidisciplinary conference, and it was the consensus of the group to do concurrent pelvic external beam radiotherapy and capecitabine will be used as radiosensitizer followed by brachytherapy. Irinotecan base chemotherapy will be initiated as her second line treatment once with progression on repeat imaging. A diagnostic whole abdominal CT scan with triple contrast was done during the treatment planning for her radiotherapy, which showed fairly defined heterogeneously enhancing mass in the cervix involving the lower uterine segment measuring 6.7 x 5.9 x 4.7 cm and appears to be intimately related to the posterior urinary bladder wall and anterior anorectal region with adjacent fat stranding. A transvaginal ultrasound was also done which revealed an anteverted averaged size uterus and a cervix that is converted to an irregular, heterogenous mass measuring 5.2 x 5.3 x 4.6

cm, with involvement of the lower uterine segment which on color flow mapping showed abundant color flow (score of 4). The endometrium is thin and there were sonologically absent ovaries. Based on the result of this imaging, which does not show disease progression in the abdomen, coupled with the clinically increased in size of the cervical mass and presence of intermittent vaginal bleeding, the patient underwent pelvic external beam radiotherapy with dose of 56 Gy in conjunction with capecitabine 1000 mg/m² BID x 5 days each week which she tolerated. Currently, patient has no vaginal bleeding and no abdominal pain. However, latest physical exam, centered on the abdominopelvic area, showed unremarkable abdominal examination findings, on internal examination, cervix was nodular measuring 5 x 5 cm, with free fornices, corpus is small and with unremarkable adnexa. On recto vaginal examination, bilateral parametria were free however shortened on the right. Further plan for this patient is to refer for Intensity-Modulated Radiation Therapy (IMRT) prior to brachytherapy and to present her case again in a multidisciplinary conference prior to continuation of treatment for the appendiceal carcinoma.

DISCUSSION

Nowadays, the presence of multiple primary malignancies is of expanding relevance. Apart from reports in the literature on the prevalence of multiple primaries, the clinical significance of managing these patients is rarely discussed.

The concept that explains the pathogenesis of multiple primary tumors is field cancerization (FC). Field cancerization implies that tumors do not arise as an isolated tumor, but occur in a field of pre-neoplastic squamous cells that have an anaplastic tendency. This may give rise to a multifocal advancement of cancers at different rates inside the field. There are several hypotheses that explain field cancerization. The first is the polyclonal theory, which says that multiple precursor fields arise under the effect of carcinogenic agents. The other theory is based on monoclonal concepts with a spread of dysplastic cells, which give rise to new fields in which multiple primary tumors may develop.⁹

The occurrence of multiple primaries is a highly unusual event. The malignancy may be limited to a single or multiple organs or, as in our case, involve two and anatomically separate organs. It is more common in organs of the same system, but it is very rare in different organs such as the cervix and appendix. According to Moertel,¹⁰ if the interval between occurrences is <6 months, it is considered to be of synchronous multiple primary malignant neoplasm, and if >6 months, it is metachronous. To decide whether a second malignancy is a primary or a metastasis is very challenging. This is difficult to do based on clinical findings alone. This has necessitated the use of Warren and Gates criteria:² that each tumor must have a definite picture of malignancy, each tumor should be histologically distinct, tumors occur in different parts of the organs, and are not continuous with each other and the possibility that one is a metastasis of the other must be excluded. Clinically, multiple primary malignancies are often confused with recurrence or distant metastasis of primary tumors since both are characterized by new lesions. Metastatic tumors are derived from the primary lesion, with both showing the same pathological characteristics and similar developmental processes and prognosis.¹¹ Hence, in our index case, synchronous double primary cancer is the more

likely diagnosis rather than one being a metastasis of the other, given the histologic and immunohistochemical evidence of a lesion found in the appendix that looks very different from her previous lesion of the cervix and that they occur within the cut off period of 6 months. Moreover, the spread of cervical cancer to the appendix is extremely rare.

The risk factors of multiple primary malignant neoplasms are unclear and are believed to be closely linked to factors such as genetic predisposition, immunological status, alcohol, tobacco, and overexposure to carcinogenic factors, particularly radiation and chemotherapy.¹² Travis et al. discovered that radiotherapy or chemotherapy alone, or both, following the treatment of a primary cancer increases risks of second primary cancers. Chemotherapy drugs, particularly alkylating agents, can damage dividing cells in normal tissues, such as the bone marrow and gastrointestinal mucosal cells, by affecting DNA synthesis and function. The current literature indicates that receiving multiple rounds of chemotherapy promotes the occurrence of other tumors.¹³ Our patient do not have immune diseases, family history of cancer, not a smoker and alcohol drinker, however received chemotherapy numerous times and this may have contributed to the development of additional primary tumor.

Our index case presented with extremely rare two organ combinations in the synchronous category, where the primary was cervical cancer followed by appendiceal carcinoma with metastasis to ovaries and omentum. The pattern of metastasis in carcinoma of the cervix initially involves pelvic lymph nodes, followed by paraaortic nodes and distant sites. The most frequent distant sites are lung, para-aortic lymph nodes, abdominal cavity, and supraclavicular lymph nodes. The majority of cervical cancer recurrences are found within 2 years of the original diagnosis.¹⁴ Hence an appendiceal metastasis was ruled out.

Malignant tumors of the appendix are a rare pathology, accounting for 0.4% to 1.0% of cases among all malignant neoplasms of the gastrointestinal tract.¹⁵ It is extremely difficult to diagnose prior to surgical inspection, and it usually depends on the pathology following appendectomy.¹⁶ In all specimens after appendectomy, the tumors account for approximately 0.7 to 1.4%, of which the incidence of mucinous adenocarcinoma accounts for 0.01% ~ 0.08%. Therefore, the rate of misdiagnosis is high.¹⁷ Our index patient was only diagnosed with primary appendiceal carcinoma after appendectomy.

In patients with multiple primaries, there are factors to be considered when deciding on the management strategy. It should be noted that in most cases these approaches are individualized decisions and not general recommendations nor based on prospective evidence but on “realistic” examples of challenging clinical setting.¹⁴, Because of the different nature of

multiple primary cancers, they should be managed as distinct tumors, including staging and treatment. The most significant tumor in terms of prognosis must be considered if there is any chance of a curative intent or for the palliative situation, and the systemic therapy options. If systemic therapy is necessary, the challenge is to look for a regimen that covers both cancer types without increased toxicity or relevant pharmacological interactions and without negative impact on the overall survival outcome. Our index case is using capecitabine as a radiosensitizer for her cervical cancer and also as one of the treatment regimens in appendiceal carcinoma.

Planning radiotherapy for a patient with multiple primary tumors necessitates attention to the treatment sequence. The first tumor diagnosed in this index case was her cervical cancer. Typically, this patient could be treated with pelvic external beam radiotherapy with concurrent weekly cisplatin followed by brachytherapy which is the mainstay of treatment for stage IIA2 disease¹⁸ however our index patient had neoadjuvant systemic chemotherapy first. And due to the coexisting presence of an advanced stage appendiceal carcinoma postoperatively, after comprehensive multidisciplinary consultation and informing the patient of the challenges and uncertainties involved, she received systemic chemotherapy first for appendiceal cancer in the form of Capecitabine 1000mg/m² BID + Oxaliplatin 130 mg/m², however, was interrupted due to progression in the size of the cervical mass causing her bleeding, necessitating to shift to concurrent pelvic external beam radiation with capecitabine.

Extended survival with multiple primaries is variable and is affected by cancer type and stage at diagnosis. Genetic factors, behavioral influences, lifestyle, and comorbidities generally influence patient's outcomes.¹⁹ Compared to a single primary tumor, multiple primary tumors have increased malignant behavior and the prognosis is worse.²⁰

CONCLUSION:

This report of a 42-year-old woman with squamous cell carcinoma, non-keratinizing of the cervix with coexisting advanced stage mucinous adenocarcinoma of appendiceal in origin and is the first reported case in the local setting. The occurrence of these is an unusual event. There is no universal protocol for the treatment, and cases must be considered individually. This case highlights the need for a multidisciplinary team accounting for the type and stage of each tumor, response to treatment, and the patient's overall status. Although a number of risk factors have been proposed in the literature, the mechanism of multiple primary malignant neoplasm is still unclear. We didn't discover a detailed explanation for the mechanism of multiple primary malignant neoplasm from our patient. ■

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