



## Gynec-Onco-Registry of a Tertiary Center of North India

Bhardwaj B\* and Gunjan R

Department of Obstetrics and Gynecology, Armed Forces Medical College, India

### Abstract

**Background:** In the recent years there has been a surge in incidence of cancers globally. Not only the incidence of cancers even the case fatality rate due to malignancies is on the rise in last few years. Gynecological malignancies are one among the commonest malignancies affecting the life of women worldwide. Keeping in view these rising trends, this study was undertaken to see the patterns of various gynecological cancers in this tertiary center of Armed Forces of India.

**Materials and Methods:** This is a prospective observational study of patients with gynecological cancers who visited the gynec-oncology OPD of a Tertiary Care Hospital of Armed Forces of India from January 2018 to January 2020 for treatment at this center. In all cases with gynecological cancers, a detailed history taking followed by clinical examination was done. Further evaluation with special investigations like USG/CT/MRI, tumor markers and tissue biopsy to establish malignancy was done based on type of malignancy. Depending upon the extent of disease, patients underwent either primary surgery in early disease or were treated with NACT followed by surgery in cases of advanced ovarian/endometrial cancers. Advanced cervical/vulvar/vaginal cancers were treated with chemo-radiation and surgery was reserved for early stage disease.

**Results:** During the entire duration of study, 116 patients were found to have various types of gynecological malignancies at our center. Carcinoma ovary was the most common cancer reported at our center followed by cervix, endometrium, GTN, vulva and vagina. Out of total 47 cases of Carcinoma ovary at our center 20 cases had early disease and underwent primary surgery whereas 24 cases had already advanced disease at admission warranting NACT followed by surgery. Three cases reported with isolated recurrence amenable to surgery post interval cyto-reduction. These patients underwent secondary cyto-reductive surgery. Out of 35 cases of carcinoma cervix 15 were operable with early stage disease whereas 20 patients had disseminated disease not amenable to surgery at the time of first visit and were treated with CCRT. Twenty-five patients had Carcinoma Endometrium and only 2 patients had advanced disease at admission warranting NACT followed by surgery. Out of five cases of GTN 4 were managed with single agent chemotherapy and 1 patient had to resort to multi-drug regimen in view of high BHCG levels. Two patients with carcinoma vulva had advanced disease with co-morbidities and underwent chemo-radiation. One patient had advanced carcinoma vagina and underwent CCRT. There were no cases of fallopian tube cancer and sarcoma uterus at our center. One patient had synchronous malignancy with endometrioid adenocarcinoma of endometrium and granulosa cell tumor in one of the ovaries.

**Conclusion:** To conclude carcinoma Ovary was the commonest tumor reported at our center though most patients had advanced disease at the time of admission. Majority cases of carcinoma endometrium were early stage and operable. 40% cases of carcinoma cervix were operable and rest underwent CCRT. Incidence of GTN, vulvar and vaginal cancer was quiet less at our center.

**Keywords:** Gynecological cancer; Cervical cancer; Ovarian cancer

### Introduction

Cancers form a major burden of morbidity and mortality worldwide. Case fatality rate due to this entity is on the rise in the present scenario. Even the incidence of gynecological cancers is on the rise since the last decade. Prevalence of these cancers varies from country to country. Carcinoma endometrium is the commonest gynecological cancer in developed world in contrast to carcinoma cervix which ranks first among gynecological cancers in developing nations. Even the mortality rates vary in both the developed and developing world. These differences in incidence and even mortality parameters could be attributed to differences in socio-economic status and level of education and health care facilities in developing countries. Major drawback among developing nations is the lack of awareness among the masses about the basic information about common cancers, any screening facilities if available in their country and importance of screening programs

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**\*Correspondence:**

Bikram Bhardwaj, Department of Obstetrics and Gynecology, Armed Forces Medical College, Room No 144/11 Faculty Block Officers Mess, Pune, Maharashtra, India, Tel: +91-7874551658;

E-mail: bikrambhardwaj@gmail.com

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**Table 1:** Incidence of various gynecological cancers from Jan 2018 to Jan 2020 at our center.

Total patients with Gynecological cancers	116
Ovarian cancer	47
Cervical cancer	35
Endometrial cancer	25
GTN	5
Vulvar cancer	2
Vaginal cancer	1
Sarcoma uterus	0
Fallopian tube cancer	0
Synchronous tumor (Carcinoma endometrium with Granulosa cell tumor of ovary)	1

in certain gynecological cancers. Better education and easy access to information has drastically reduced the mortality due to cervical cancer as majority of the patients are being diagnosed in pre-invasive stage of disease due to regular screening. In contrast incidence of ovarian and endometrial cancer is on the rise in developed nations, reasons being better life style, rich diet and increasing incidence of metabolic syndrome in these nations and no screening tests available in these cancers. However, most patients with endometrial cancer are diagnosed at early stage and are amenable to surgery reducing the morbidity and mortality in contrast to ovarian cancers which are usually advanced at the time of diagnosis with poor five-year survival rates.

Endometrial and ovarian cancers usually occur in older age group. However, cases have been reported in very young population in our study where in 2 patients with carcinoma ovary were less than 30 years of age. Cervical cancer nowadays has a bimodal peak with first wave between 30 to 40 years and second wave after 50 years of age. Multiparity is protective for ovarian and endometrial cancers whereas risk increases with parity in cervical, vaginal and vulvar cancers. Due to wide variations in distribution and frequency of gynecological cancers this study aimed to highlight the patterns of gynecological cancers at our center. More so composite data is easily available for western world but no such organized data exists for Indian population and that too for armed forces.

## Material and Methods

This is a prospective observational study conducted in the Department of Obstetrics and Gynecology in a Tertiary Hospital of Armed Forces of India from January 2018 to January 2020.

### Inclusion criteria

All cases of gynecological cancers who visited the gynec-oncology out-patient department were enrolled. A detailed history taking followed by examination and a particular set of investigations were done as per the tumor types.

### Exclusion criteria

All cases with benign tumors or pre-invasive lesions were excluded from the study.

### Method of study

The couples attending the out-patient department of gynec-oncology clinic at our hospital were examined clinically after detailed history taking including age, residential address, marital status, parity and sterilization. Gynecological malignancies included ovarian, fallopian tube, endometrial, cervical, GTN, sarcoma uterus, vaginal and vulvar cancers. Based on clinical examination and investigations including imaging and tumor markers depending upon tumor types, treatment plan in the form of chemotherapy/radiotherapy or surgery was formulated. Information related to the disease like symptoms, the site, stage of tumor and treatment given were noted as per the standard proforma. Data collected was analyzed to see the incidence of various gynecological cancers in our study. Microsoft excel was used to analyze the data and descriptive statistics were expressed as percentage.

## Results

In the present study, during the span of 2 years from January 2018 to January 2020 total 116 patients were admitted with gynecological cancer at our institute. The incidence of various types of gynecological cancers at our center is shown in Table 1. Carcinoma ovary was the commonest cancer at our center with majority patients reporting with advanced disease at the time of admission. All cases of advanced carcinoma ovary were epithelial in origin with majority serous variety and a few advanced mucinous types. In the early stage disease, there were 2 cases of germ cell tumors, 6 cases of sex cord stromal tumors and rest all epithelial tumors. Three patients with epithelial ovarian cancer underwent secondary cyto-reduction at our center in view of recurrence post interval cyto-reductive surgery. This was followed by cervical, endometrial, GTN, vulvar and vaginal cancer in decreasing order of frequency. Most of the cervical cancers were of squamous variety barring 2 cases which had adenocarcinoma. Sixty percent cases of carcinoma cervix were advanced stage at admission and were managed by concurrent chemo-radiation. Fifteen cases of early Carcinoma cervix were managed with single modality (Type III Radical Hysterectomy). Four cases underwent minimally invasive laparoscopic radical hysterectomy. No adjuvant treatment was required in all patients who underwent surgery. Majority cases of carcinoma endometrium were early stage endometroid variety. Three cases had mixed Mullerian tumor and 2 patients with advanced disease had serous papillary variety of carcinoma endometrium. Out of total 25 cases of carcinoma endometrium 7 underwent minimally invasive laparoscopic staging for carcinoma endometrium. Three cases of mixed Mullerian tumor and 2 cases of serous papillary carcinoma endometrium received Sandwich therapy as part of adjuvant treatment. No adjuvant treatment was given all other cases. Eighty percent cases of GTN were treated with single agent

**Table 2:** Age wise distribution of gynecological cancers.

Age group of patients	Ovarian Cancer	Cervical Cancer	Endometrial Cancer	GTN	Vulvar	Vaginal
20 years to 29 years	4	0	0	1	0	0
30years to 39 years	4	3	1	4	0	0
40 years to 49 years	13	7	8	0	0	0
50 years to 59 years	19	14	7	0	0	1
60 years to 69 years	7	11	9	0	2	0

**Table 3:** Parity wise distribution of gynecological cancers.

Parity	Ovary	Cervix	Endometrium	GTN	Vulva/Vagina
Nulliparity	3	0	1	0	0
1-2	13	8	10	3	
3-4	31	21	14	2	3
5 & above	0	6			

**Table 4:** Menopausal status of patients with gynecological cancer.

Menopausal status	Ovary	Cervix	Endometrium	GTN	Vulva/vagina
Pre-menopausal	25	15	14	5	3
Post-menopausal	22	20	11	0	0

**Table 5:** Clinical presentation of various gynecological cancers.

Symptoms	Ovary	Cervix	Endometrium	GTN	Vulva/Vagina
Pain abdomen	17	2	2	1	0
Abdominal distension	20	0	0	0	0
Discharge per vaginam	0	14	4	0	1
Menorrhagia	8	9	8	4	0
Postmenopausal bleeding	2	10	11	0	2

chemotherapy and were cured. Only 1 patient had high risk GTN and was treated with multi-drug therapy. Both cases of vulvar cancer were advanced disease with co-morbidities in patients making them unfit for surgery. Both patients received radiation as part of their treatment. There were no cases of sarcoma uterus and fallopian tube cancer at our center. One patient had synchronous cancer with endometrioid adenocarcinoma of endometrium and Granulosa cell tumor in one of the ovaries as shown in Table 1.

Most of the patients of carcinoma ovary were in the age group 40 to 60 years except four patients in the age group 20 to 30 years. In the younger age group, two patients had germ cell tumor of ovary and 2 had advanced epithelial ovarian cancer. Carcinoma cervix had bimodal peak with 10 cases between 30 to 50 years of age and 25 cases between 50 to 70 years of age. Majority of endometrial cancer patients were between 40 to 70 years of age except 1 patient who had carcinoma endometrium at 30 years of age. All tests for genetic screening in this patient were negative. All patients of GTN were young between 20 to 40 years of age and were fully cured with chemotherapy. Vulvar and vaginal cancer cases though few in number were in the elderly age group as shown in Table 2. Three patients with ovarian cancer were Nulliparous at the time of diagnosis. Two were unmarried and had Germ cell tumors and one patient had advanced epithelial ovarian cancer. One patient of carcinoma endometrium had long standing history of infertility as shown in Table 3. Nearly 50% cases of ovarian, cervical and endometrial cancer were in the postmenopausal age group. All cases of vulvar and vaginal cancer also had post-menopausal status. All cases of GTN were in the younger pre-menopausal age group as shown in Table 4. Majority of the cases of carcinoma ovary presented with either abdominal pain or distension of abdomen. Abnormal white discharge and bleeding p/v was the commonest presentation in patients of carcinoma cervix. Majority of the cases of endometrial cancer presented with abnormal uterine bleeding. All cases of GTN had irregular bleeding p/v as their main complaint. Abnormal discharge and bleeding p/v were the main presenting complaints of patients of carcinoma vagina/vulva (Table 5). Majority of the ovarian cancers were adenocarcinoma of ovary serous/mucinous types. Squamous cell carcinoma was the commonest

**Table 6:** Histological types of gynecological cancers.

Site of Malignancy	Histology	Frequency
Ovary	Serous cystadenocarcinoma	35
	Mucinous cystadenocarcinoma	4
	Dysgerminoma	1
	Immature teratoma	1
	Granulosa cell tumor	2
	Fibrothecoma	4
Cervix	Squamous cell carcinoma	33
	Adenocarcinoma	2
Endometrium	Endometrioid adenocarcinoma	20
	MMT	3
	Serous papillary	2
	Clear cell	1
Vagina	Squamous cell carcinoma	1
Vulva	Verrucous carcinoma	2

variety of histology in carcinoma cervix. Majority of endometrial cancers were adenocarcinoma types except 3 cases of MMT and 2 cases of serous papillary variety of carcinoma endometrium (Table 6).

Out of total 116 gynecological cancers treated at our center in last 2 years 7 patients had recurrence. Four cases of advanced carcinoma ovary had recurrence after 1 year. Two patients had bad histology while other 2 cases didn't complete adjuvant chemotherapy and were lost to follow up. One operated case of carcinoma cervix had pelvic nodal recurrence after 1 year and was treated with radiotherapy as no adjuvant was given after initial surgery. Two cases of carcinoma endometrium with advanced disease were lost to follow up after initial surgery and didn't complete adjuvant radiation. One patient had large nodal recurrence within 1 year and died.

## Discussion

Cancers are one of the most common dreadful diseases with significant morbidity and mortality affecting the life of women.

Gynecological cancers have shown an upsurge in recent times and are an important health issue now. Because of lack of awareness and screening facilities among the masses in our country, patients usually report at advanced stages of disease. All this has lot of bearing on the final outcome and prognosis of the disease. Ovarian cancer is emerging as the leader of gynecological cancers in India in the recent past. Though cervical cancer incidence is on decline, still it is the second most common cancer affecting women in India. In this study ovarian cancer (40.8%) was the commonest genital cancers among women followed by cervical (31%) and endometrial cancer (20%). GTN, vulvar and vaginal cancers together constituted the remaining 10%. The results are in contrast to that of other Indian studies and few other countries. Jeph et al. [1] from Haryana reported cervical cancer (67.2%) and Agarwal et al. [2] reported cervical cancer (71.47%) from Delhi in their studies as the most common cancer [1,2]. Jhansivani and Rani [3] from Guntur reported 85% of cancer cervix in their studies [3]. Joseph et al. [4] reported 60.6% in Nigeria. Contrary to this was reported from Pakistan, where ovarian cancer (72.5%) was the leading gynecological cancer [5,6].

Endometrial cancers were the most common cancer among female genital cancers in the European countries [3,7]. Cervical cancer was the second most common cancer in our study followed by endometrial cancer. This is in contrast to other studies from other parts of India and Nigeria [1,2,8]. These differences in the patterns of frequency of gynecological malignancy at our center could be due to more availability of screening programs, education, and awareness about lifestyle diseases. Majority of the cervical cancer patients despite so much screening available report in advanced stage of disease when it is not amenable to surgery as shown in our study also. Such patients are then managed with concurrent chemo-radiation. Majority of patients with ovarian cervical and endometrial cancers were in the elderly age group with median ages of 52 years, 50 years and 54 years respectively. This is in comparison to the study done by Agarwal et al. [2]. However, the SEER database reflects median age of carcinoma cervix to be lower (48 years) whereas ovarian and endometrial cancers tend to occur at older ages [6,7].

Most of the patients in our study were parous except one patient of carcinoma endometrium who had history of long-standing infertility and 2 cases of young carcinoma ovary who presented with germ cell tumors. Multiparity (3 to 4) was an obvious high-risk factor reflected in our study in patients of cervical cancer [9,10]. But Nigerian studies showed that cancer cervix occurred at a higher order parity (5 and above). Reason being more prevalence of higher order parity in Nigeria due to lack of availability of effective family planning methods in their country compared to India [10].

Although pregnancy has a protective role against ovarian and endometrial cancer, most of the patients in our study with these cancers were parous except one patient of carcinoma endometrium with a long-standing history of infertility and 2 young nulligravidas with Germ cell tumors of ovary. This is in comparison to a study from Ghana [9]. Cancers usually affects the older population of the society, but in our study 50% of ovarian and endometrial cancers and 40% of cervical cancers affected the pre-menopausal age group. Majority of the genital malignancies present with menstrual disturbances in out-patient departments. Abnormal uterine bleeding and discharge per vaginum were the main complaints of patients with cervical and endometrial cancers. Abdominal pain and distension tend to be the common presentations in carcinoma ovary. This is in comparison

with other studies [11,12]. Most of the cases of carcinoma ovary in our study were advanced stage and were managed by NACT followed by interval cyto-reductive surgery. Majority of the cases of cervical cancer had the commoner squamous cell variety in contrast to 2 patients with adenocarcinoma. Sixty percent cases of cervical cancer were in advanced stage at the time of diagnosis and were treated with CCRT. Remaining 40% were amenable to radical surgery being early stage. Four cases were treated with minimally invasive radical surgery.

Endometrioid adenocarcinoma was the commonest histology seen in endometrial cancer and majority were early stage disease amenable to surgery. These results are similar to other studies [3,13]. Three cases of MMT were treated with sandwich therapy after surgery and 2 advanced cases of serous papillary variety of carcinoma endometrium were given NACT followed by surgery. All cases of GTN were fully cured with chemotherapy. Both the cases of advanced carcinoma vulva were treated with radiation as both patients were unfit for surgery due to old age and co-morbidities [14-16]. Only case of carcinoma vagina was treated with CCRT due to advanced disease.

## Conclusion

To conclude carcinoma ovary was the commonest tumor reported at our center though most patients had advanced disease at the time of admission. Majority cases of carcinoma endometrium were early stage and operable. 40% cases of carcinoma cervix were operable and rest underwent CCRT. Incidence of GTN, vulvar and vaginal cancer was quiet less at our center. There were no cases of fallopian tube carcinoma and sarcoma uterus at our center. One patient had a synchronous tumor comprising of carcinoma endometrium and granulosa cell tumor of the ovary. Recurrences did occur at our center also but primarily due to incomplete adjuvant treatment by patient's post-surgery and due to lost to follow up after primary treatment. Though there has been lot of emphasis on prevention of cervical cancer in the form of regular PAP smear screening, availability of HPV vaccines in tertiary care centers and off and on educating the masses about this cancer through awareness programs yet there is not much of decline. Health care workers need to be trained on VIA/VILI so as to pick the disease at early stage and timely referral to higher center for needful. Similarly lack of any effective screening methods in case of ovarian and endometrial cancers contributes to their rise. We need to be more ruthless in near future in providing more awareness and screening facilities to the masses especially to the down trodden group of the society so as to reduce the morbidity and mortality from this dreadful disease.

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