

The pattern of gynecological malignancies in 968 cases from Pakistan

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The pattern of gynaecological malignancies is different in various geographical areas. It is said that cervical cancer is one of the leading cancers in women worldwide, second only to breast cancer; 80% of new cases occur in developing countries.¹ In African and Indian studies as well, it is cervical cancer that is the most frequent of gynaecological malignancies.^{3,4,5} In most studies from Pakistan,^{6,7,8} cervical cancer is not the top gynaecological malignancy; ovarian tumors are more frequent. In the previous tumour registry data analysis from our institute ovarian tumors were also more frequent than cervical cancer.⁹ The histological pattern, particularly of ovarian tumors, is also slightly different than that reported in different studies as is the age distribution of cases.^{4,7,10,11} The purpose of this analysis was to find the pattern of gynaecological malignancies in our population and to compare it with other national and international studies.

Methods

The Armed Forces Institute of Pathology receives specimens from various military and civil institutions all over northern Pakistan. All histologically diagnosed malignant tumors of the female genital tract are registered with tumour registry. Basic epidemiological data regarding each case were collected from the request forms. The study includes all malignant tumors of the female genital tract, diagnosed from January 1992 to December 2001. During the study period a total of 968 patients were registered as having gynaecological malignancies. The specimens were received in 10% formal saline. Gross examination of surgical specimens was performed and recorded on a proforma. Adequate representative tissue sections from the lesions were taken as described by Rosai.¹² The material was processed under standardized conditions for paraffin embedding. The sections were stained with haematoxylin and eosin (H&E). Special stains were used when required. Each tumour was assigned an ICD-O code,¹³ published by the International Agency for Research on cancer (IARC). The histological classification of tumors proposed by WHO was used.¹⁴

Results

The 968 cases of gynaecological malignancies constituted 4.6% of all malignant tumors diagnosed during the same period and 11.3% of total female malignancies. The overall frequency of malignant tumors involving different sites of the female genital tract are shown in Table 1. The age distribution of the tumors involving four main sites i.e. ovary, cervix, endometrium and uterine wall is shown in Figure 1. The mean age of women with cervical, ovarian and endometrial tumors was 50.3, 46.5 and 52.5 years, respectively.

Ovarian tumors were the most frequent, comprising 42.4% of all gynaecological malignancies. The age distribution of ovarian tumors

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showed that the majority of the cases (58%) occurred in women between 30 to 59 years of age. Fifteen cases (3.6%) in the pediatric age group were also seen. Surface epithelial tumors were the main histological type (Table 2). Cases of granulosa cell tumor, malignant germ cell tumors (mainly dysgerminoma, followed by embryonal carcinoma and yolk sac tumors), clear cell adenocarcinoma and malignant Brenner tumors were also seen.

Cervical cancer, which is the most frequent in most western studies, was the second most frequent in this analysis (Table 1). Peak incidence was in the 50 to 59 year age group. Histologically, squamous cell carcinoma was found in 88% cases, whereas cases of adenocarcinoma, adenosquamous carcinoma, leiomyosarcoma, malignant melanoma and rhabdomyosarcoma were also seen.

Next in frequency was uterine cancer with 162 cases of endometrial tumors and 67 cases arising in the wall of the uterus. The majority of cases were seen in the 50 to 70 year age group. Adenocarcinoma of the endometrium was the main histological type (86.5%) followed by cases of adenosquamous carcinoma, squamous cell carcinoma, and endometrial stromal sarcoma, whereas 4.2% cases were labeled as undifferentiated carcinoma. The majority of the adenocarcinomas (80%) were of the endometrioid type with a few having squamous differentiation. Tumors in the wall of the uterus were mostly leiomyosarcomas.

Tumors of the vulva and vagina comprised 5.4% and 4.4% of the total, respectively. These tumors were mostly seen in the 40 to 60 year age groups. Squamous cell carcinoma was the main type in both of these sites, but cases of malignant mixed tumors, malignant melanoma, sarcoma botryoides and epithelioid sarcoma were also seen. One 40-year-old patient, having a malignancy of the fallopian tube (serous adenocarcinoma), completed the list of gynaecological malignancies.

Discussion

According to the world cancer report, cervical cancer is the most common cancer of the female reproductive tract. It is said that about 470000 new cases are diagnosed each year.¹ The incidence is higher in developing countries and has been declining in the last three or four decades in most developed countries, predominantly due to effective cervical screening programs.¹⁵ In our records, not only in this study, but in our previous analysis as well and other Pakistani studies, cervical cancer is second to ovarian

Table 1. Site distribution of gynaecological malignancies (n=968)

Site	ICD-O code	Total	Percentage
Vulva	51.9	53	5.48
Vagina	52	43	4.44
Cervix	53	231	23.86
Endometrium	54.1	162	16.74
Uterus NOS	55.9	67	6.92
Ovary	55.9	411	42.46
Fallopian Tubes	57.0	1	0.10

NOS = not otherwise specified

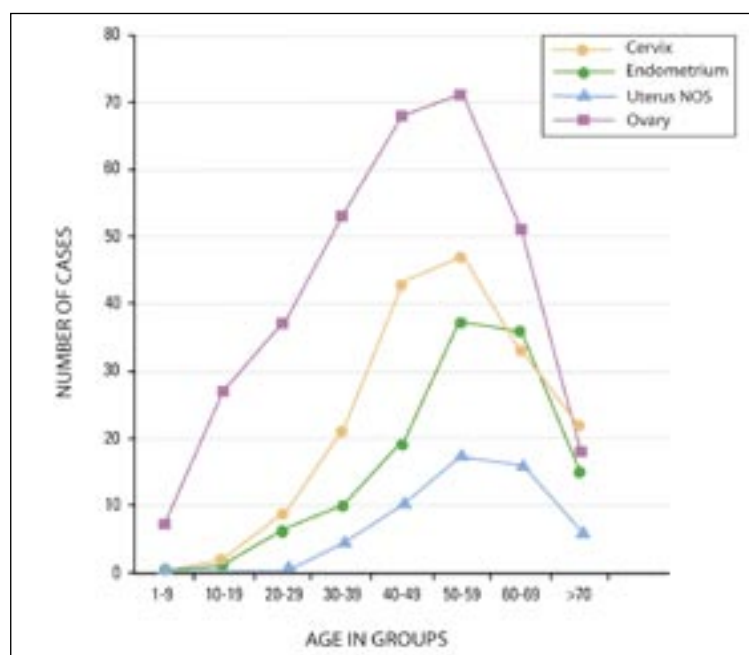


Figure 1. Age distribution of four main sites; NOS = not otherwise specified

Table 2. Histological types of ovarian tumors (n=411)

S.No.	Histological type	No. of cases	Percentage
1	Serous cystadenocarcinoma	121	29.4
2	Endometrioid carcinoma	80	19.5
3	Mucinous cystadenocarcinoma	65	15.8
4	Malignant teratoma	29	7.0
5	Other germ cell tumors	30	7.3
6	Sex cord stromal tumors	55	13.4
7	Malignant Brenner tumors	10	2.4
8	Miscellaneous tumors	21	5.2

tumors among gynaecological malignancies.⁶⁻⁹ In our analysis, cervical cancer made up 23.9%, whereas in an Indian study it comprised up to 80%.³ Low rates are observed in China, in western Asia and most of the Muslim countries, including Saudi Arabia.^{1,16} In a study of the cancer profile at the Riyadh Armed Forces Hospital, male circumcision and a high level of genital hygiene in the Saudi population was thought to be one of the possible reasons for the low incidence of cervical cancer.¹⁶ The same practices may be operative in other Muslim countries as well. The peak incidence of cervical cancer in this study was in the 40 to 59 year age group as compared to the reported 45 to 49 year group in other studies.¹ Persistently high rates are seen in Latin America, and in India and Africa.¹ Certain human papilloma viruses (HPV) have an etiological role, and there is a well-established link with sexual behavior, like multiple sexual partners and an early age of initiation of sexual activity.¹⁷ Squamous cell carcinoma is the main histological type. We also observed that 88% of our patients had squamous cell carcinoma. Adenocarcinoma is said to be increasing and up to 20% to 25% is reported in some series, but we had only 8%.^{18,19}

Cancer of the ovaries represents about 30% of all cancers of the female genital tract,²⁰ but we had 42.5% cases with ovarian malignancies and the same is reported in other national studies.^{7,9,11} These tumors were seen in all age groups and 3.6% cases were seen

in the pediatric age group. The mean age was 46.5 years and almost the same age incidence (42 to 48 years) is reported in other national studies.^{7,10,11,21,22} Surface epithelial tumors formed the main histological group not only in this analysis but in other national and international studies.^{1-5,7,10,11,21} Sex cord stromal tumors and germ cell tumors were, however, more frequently seen in this study than in western studies. Our finding was similar to those of other national, African and Indian studies.^{2-4,7,10,20}

Endometrial carcinomas were the next most common gynaecological malignancy. The incidence of this malignancy is higher in the more developed countries and lower in Africa and Asia.¹ In our analysis it constituted 16% of gynaecological malignancies. The same or lower frequency is reported in other observations.³⁻⁵ Adenocarcinoma is the main histological type reported in all series. Tumors of the vagina and vulva showed a predictable age distribution and histological pattern in this series.

We conclude from this study that ovarian tumors are much more frequent gynaecological malignancies than cervical cancer, not only in this study, but in the previous analyses of same population as well as in almost all studies from Pakistan. Overall gynaecological malignancies involve a slightly younger age group. In the ovaries, germ cell and sex cord stromal tumors are more frequently reported than in western studies.

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