

## Pathology-Based Tumour Registry Analysis of Cases of Female Genital Tract Malignancies

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### ABSTRACT

**Objective:** To study the frequency and distribution of Female genital tract (FGT) malignancies through data recouped from the tumour registry of Armed Forces Institute of Pathology, Rawalpindi Pakistan.

**Study Design:** Retrospective longitudinal study.

**Place and Duration of Study:** Histopathology Department, Armed Force Institute of Pathology, Rawalpindi Pakistan, from 2009-2018

**Methodology:** A total of 1586 cases of malignant tumours of FGT were retrieved from the AFIP tumour registry, and data were analyzed in terms of the age of the patients' site of the tumour. It was also compared with regional and international data.

**Results:** Thirty-seven thousand seven hundred ninety-three malignant cases were reported at AFIP from 2009-2018, out of which 1586(4.19%) were of the female genital tract. Ovarian malignancies were most frequent among FGT tumours, 637(40.1%), followed by uterine tumours 519(32.6%). Carcinoma of the cervix was found in 237 cases (15%). Vulva and vaginal cases were seen in only 7.7% patients. The FGTs ranked fourth among the top ten commonest tumours in females.

**Conclusion:** The most common malignancy of the female genital tract was ovarian cancer. Endometrial carcinoma was the second most frequent gynaecological malignancy, followed by cervical carcinoma. Ovarian malignancies were in fourth position among the top ten commonest female tumours in the current analysis as well, as in the previous analysis from AFIP.

**Keywords:** Endometrial cancer, Female genital tract tumours, Ovarian malignancies.

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### INTRODUCTION

The incidence of malignant gynaecological tumours varies in different geographical regions and depends on distinct lifestyles, genetic predispositions and socioeconomic status. Globally, cervical carcinoma is designated the third most frequent malignancy in the female population after breast and colorectal cancers.<sup>1,2</sup> The incidence of cervical carcinoma is, however, lower in Pakistan. Nevertheless, the mortality rate of cervical malignancy is still higher due to delays in the diagnosis, which is attributable to ineffective screening programmes in Pakistan.<sup>3</sup> Human papillomavirus (HPV) infection is found to be the leading cause of cervical cancer among Pakistani women.<sup>4,5</sup>

Ovarian neoplasms affect a significant number of the female population and have the worst prognosis among all gynaecological malignancies. In Pakistan, there has been a rapid elevation in the occurrence rate of ovarian malignancy (13.6% of the women population). Most of these patients are unfortunately diagnosed at an advanced stage with worse outcomes.<sup>6</sup> Surface epithelial tumours are the commonly diagnosed histological type, while germ cell and sex cord-stromal tumours of the ovary are less frequent.<sup>7</sup>

Endometroid adenocarcinoma is the most common histologic type of endometrial carcinoma, mostly arising in the background of endometrial hyperplasia and the history of extra exposure to estrogen. Most females diagnosed with endometrial carcinoma are in their sixth decade.<sup>8</sup>

Vulval and vaginal malignancies are rare, constituting less than 5% of all female genital tract tumours. However, squamous cell carcinoma is the most frequent histological type in both sites. (comprising 90% of vulval and 80% of vaginal tumours, respectively). The incidence is higher in older women.<sup>9</sup> However, premenopausal females have also been affected.<sup>10</sup>

This study highlights the prevalence and distribution of gynaecological malignancies and their changing trends in our population by analysing the data retrieved from the AFIP tumour registry.

### METHODOLOGY

The retrospective longitudinal study was conducted at Histopathology Department, Armed Force Institute of Pathology, Rawalpindi Pakistan, from 2009-2018 Data was retrieved from the AFIP tumour registry after taking approval from Institutional Review Board (Certificate reference number: FC-HSP16-17/READ-IRB/19/522).

**Inclusion Criteria:** Cases included were fresh biopsies received, processed, analyzed and reported at AFIP.

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Biopsies received and reported for second opinions from various centres were also included in this study.

**Exclusion Criteria:** None

The data were analyzed regarding the patient's age and tumour location. Analysis of these tumours in different decades and in the paediatric age group was also carried out. The data were compared with other regional and international studies.

Statistical Package for Social Sciences (SPSS) version 23.0 was used for the data analysis. Quantitative variables were summarized as Mean±SD & qualitative variables were summarized as frequency and percentages.

**RESULTS**

Thirty-seven thousand seven hundred ninety-three malignant cases were reported at AFIP from 2009-2018, out of which 15716(41.5%) were female patients. The total number of malignant FGT tumours reported in 10 years was 1586(4.19%), and 10% of total malignancies were reported in females. Distribution of sites of malignant tumours of female genital tract was shown in the Table-I.

**Table-I: Distribution of Sites of Malignant Tumours of Female Genital Tract (n=1586)**

| Sites of Malignant Tumours of Female Genital Tract | n(%)       |
|--|------------|
| Vulva  | 53(3.3%)   |
| Vagina   | 69(4.4%)   |
| Cervix   | 237(15%)   |
| Endometrium  | 252(15.8%) |
| Uterus/myometrium                                  | 267(16.8%) |
| Ovary  | 637(40.1%) |
| Female genital tract NOS                           | 71(4.4%)   |

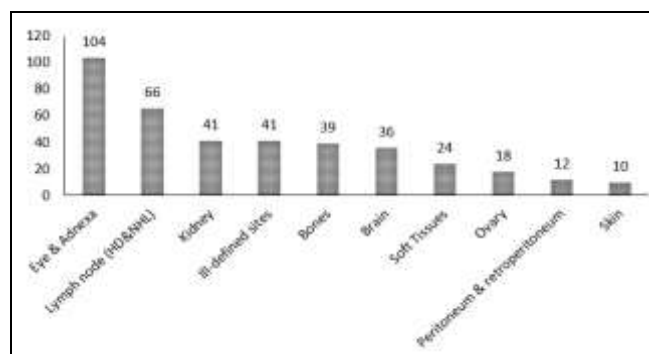
The distribution of various histological types of ovarian tumours was shown in the Table-II.

**Table-II: Distribution of Histologic Types of Ovarian Tumours (n=350)**

| Histological Type       | n(%)     |
|-------------------------|----------|
| Serous carcinoma        | 198(56%) |
| Endometrioid carcinoma  | 46(13%)  |
| Granulosa cell tumour   | 28(8%)   |
| Mucinous adenocarcinoma | 66(19%)  |
| Germ cell tumour        | 12(4%)   |

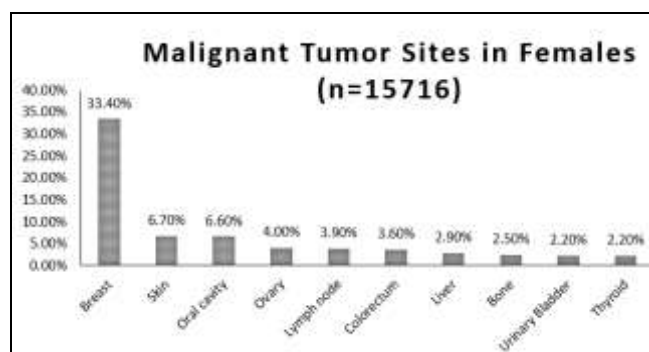
The ovarian malignancy was seen in all age groups, including 18 paediatric cases. However, most cases were found between 40-60 years. In the paediatric age group, germ cell tumours were most frequent, whereas, in adults, surface epithelial tumours formed the bulk of this malignancy. On analysis of the ten

commonest tumours in female children, ovarian tumours were ranked at eighth position with a total of 18 cases (3.9%) (Figure-1).



**Figure-1: Ten commonest Malignant Tumour Sites in Female Children (n=391)**

On analyzing the top ten common malignant tumours in adult and elderly females, ovarian malignancies were the 4th most frequent tumours in the current analysis as well, as in the previous analysis from AFIP (Figure-2). Ovarian malignancy was seen in all age groups, but most cases were found between 40 and 60 years.



**Figure-2: Ovary ranked fourth among the top ten Commonest Malignant Tumour sites in Females**

**DISCUSSION**

There is considerable variability in the incidence of cancer and its related mortality amongst different racial groups.<sup>11,12</sup> The incidence and frequency of gynaecological malignancies are increasing worldwide. However, the rate is higher in developing countries. On average, five million new cancer cases are reported per annum.<sup>13</sup> FGT tumours affect a significant number of the female population in Pakistan, and their incidence is increasing at an alarming rate.

In our analysis of ten years of data on gynaecological malignancies reported in the AFIP tumour registry, ovarian malignancies were most frequent

among FGT tumours. The same fact was highlighted previously in the AFIP study on the pattern of gynaecological malignancies in 968 cases during the period of ten years (1992-2001).<sup>14</sup> These findings are comparable with the study conducted locally in the southwestern region of Pakistan by Hina *et al.*<sup>15</sup> In a study carried out in Tehran, ovarian cancers were concluded to be the most commonly diagnosed tumours (55.5%) in 450 cases of FGT, succeeded by uterine cancers (24.9%) and cervical cancers (19.6%).<sup>16</sup> These facts are contrary to Nigerian and Indian studies. The Nigerian study concluded cervical cancer to be the most frequent malignancy among FGT tumours, followed by ovarian tumours.<sup>17</sup> An Indian study also reported that out of 504 patients of FGT, cervical carcinoma was diagnosed in 339 patients (67.2%).<sup>18</sup> However, Maheshwari *et al.*<sup>19</sup> in 2016 reported that ovarian cancer is a common female malignancy and has also exhibited enhanced incidence rates.

Tumour registry data analysis of the last ten years data also showed that FGT tumours were in the top 10 tumours, being ranked at 7th number. Ovarian malignancies were the 4th most frequent among females. Most common among ovarian malignancies were the germ cell tumours among the paediatric age group, while serous carcinoma was the most common among adults.

Our study ranked cervical cancer as the third most common malignant tumour of the female genital tract. The incidence of cervical malignancy is lower in Pakistan compared to the western world and some neighbouring countries. Still, some local studies reported a high incidence of cervical carcinoma in Pakistan.

Data analysis through a properly maintained tumour registry can demonstrate the emerging incidence variations of gynaecological malignancies in our population and any region worldwide. This, in turn, can aid researchers and health administrators in initiating cancer screening programs, which are unfortunately still non-existent in our country.

### CONCLUSION

Ovarian carcinoma was the most common tumour of FGT malignancies, followed by endometrial and cervical carcinoma. Vulvar and vaginal malignancies were rare. FGTs (ovarian malignancies) were in fourth position among the top ten commonest female tumours in the current analysis as well, as in the previous analysis from AFIP.

AFIP Tumour registry data analysis has allowed us to demonstrate the prevalence and frequency of FGT tumours in only a limited set of our population. Moreover, these tumour registries are deficient across the country, thus

highlighting the need to establish more pathology-based tumour registries to acquire better information on changing trends of these malignancies across different regions.

**Conflict of Interest:** None.

### Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

MA: Conception, study design, drafting the manuscript, approval of the final version to be published.

MTK & MA: Data acquisition, data analysis, approval of the final version to be published.

HUD & SJ: Critical review, data interpretation, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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