## Original Article

# Gynaecological Cancers in Surgical Specimens – A Hospital Based Analysis

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***Abstract***

*Female genital tract malignancies have worldwide distribution, but the distribution and frequency vary from one region to another. The preventable carcinoma of the cervix is still the leading cause of cancer morbidity and mortality in the developing countries.*

*Objective of this study is to determine the patterns and frequency of female genital tract malignancies in our population and to compare it with other national and international studies.*

*A six-year retrospective analysis of histopathologically proven gynecological malignancies was performed in the Department of Pathology, Enam Medical College & Hospital, Savar between January 2008 and December 2013.*

*Out of the total 185 gynaecological cancers diagnosed, 120 cases (64.87%) were cervical, 44 (23.78%) ovarian, 12 (6.49%) corpus uteri, 7 (3.78%) vulval, and 2 (1.08%) vaginal cancers. No malignant lesion is found in the myometrium and the fallopian tube. Age of the cases ranged from 4 months and 85 years with mean age 43.91±12.84 years. The mean ages of cervical and ovarian cancers were 46.64±10 and 37.16±14.66 years respectively. Majority of the patients were between the fourth and six decade with peak frequency in the fifth decade of life. Squamous cell carcinoma was the commonest histopathologic type in cervical and vulval cancers whereas serous cyst adenocarcinoma and endometrioid adenocarcinoma were the commonest types in the ovary and endometrium respectively.*

*Carcinoma of the cervix was the commonest malignancy encountered in this study. Effective screening programs and public awareness is necessary for early diagnosis and decrease mortality.*

***Key words:*** *Gynaecological cancers; Squamous cell carcinoma; Adenocarcinoma*

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### Introduction

Cancers of the female genital tract are an important cause of cancer morbidly and mortality worldwide. Cervical, endometrial and ovarian cancers are relatively more common, whereas vulval, vaginal, fallopian tube cancers and choriocarcinoma are very rare. The distribution and frequency of these tumors vary from one region to the other.[1]

Cervical cancer is the fourth most common cancer affecting women worldwide, after breast, colorectal and lung cancers. It is also the fourth most common cause of cancer death in women worldwide. Almost 70% of the global burden falls in areas with lower levels of development. High frequency rates are found in Eastern, Western, Southern and Central Africa, South-Central Asia, South America, and Melanesia. Rates are lowest in Western Asia, North America and Australia/ New Zealand.[2] The incidence and mortality of cervical cancer had declined in North America during the last fifty years by two-thirds to its present rank as the eight leading cause of cancer mortality, as an outcome of effective cervical screening programs and treatment for premalignant lesions of the cervix.[1]

Endometrial cancers is the sixth most common cause in women worldwide and leading female genital malignancy in the United States and other developed

nations. Cancers of ovary and ovarian adnexae, including fallopian tube cancer, constitutes the eight most common cancers among women worldwide. The incidence rate of ovarian cancers is at least twice as high in Europe and North America than in Asia and Africa. The incidence of ovarian cancers ranks below only carcinoma of cervix and endometrium among the cancers of the female genital tract. It accounts for 3% of all cancers in female.[2]

Age and parity are known to affect the incidence of gynecological cancers. Endometrial and ovarian cancers occur later in reproductive life than carcinoma of the cervix which is seen commonly in premenopausal or perimenopausal women. Enodometrial carcinoma arises mainly in postmenopausal women, the peak incidence is in 55 to 65 age group and ovarian cancers are more common between the ages of 45 and 65 years. The peak incidence of cervical carcinoma is 45 years. Women of high parity have relatively low risk of developing endometrial and ovarian cancers, while multiparity is associated with increased risk of cervical carcinoma.[1]

In Bangladesh, genital cancer is increasing day by day. Among those cervical cancer is the most common and it ranks as the second most frequent cancer among women and the second most frequent cancer among women between 15 and 44 years of age. According to hospital based statistics it constitutes 22% to 29% of the female cancers in different areas of the country. Current estimates indicate that annual incidence of cervical cancer is 11956; about 80% women come for treatment in advance stage and 6582 die from the disease.[3,4]

Despite the high frequency of some female genital tumors in our environment, there is paucity of literature on the subject. Therefore, this study was designed to provide information regarding the pattern of gynecological malignancies and their relative frequencies in relation to age and sites of female genital tract. These findings could have a significant implication to devise strategies for effective screening, early diagnosis and timely management to reduce the morbidity and mortality from these cancers.

## Materials and Methods

This was a retrospective cross sectional analysis of all patients with gynaecological cancer who underwent histopathological examination in the Department of Pathology of Enam Medical College & Hospital, Savar, Dhaka between January 2006 to December 2013. A total of 185 malignant neoplasms from female genital system namely uterine corpus and cervix, vulva, vagina, ovaries and gestational trophoblastic tissues have been analyzed in all age groups for distribution, site and histopathologic types.

The specimens were fixed in 10% formalin, processed as per routine laboratory procedure, embedded in paraffin for the preparation of blocks and sections were stained with the routine haematoxylin and eosin method. The special stains were prepared whenever necessary.

All relevant data on histopathologically proven malignant cases were retrieved from the histopathology request forms and register. All the data obtained were tabulated and analyzed.

Being a retrospective study, it was not possible to establish exact time period of the onset of the disease, parity and follow up of the patients was not possible and survival could not be established. By doing prospective study the patients can be properly followed and patients' survival and prognostic factors in malignant cases can be established.

## Results

A total of 185 cancers of female genital tract were obtained in the Department of Pathology, Enam Medical College & Hospital, Savar, Dhaka during six year study period (2008-2013). The age of the patients ranged from 4 months to 85 years with a mean age 43.91±12.84 years. Majority of the cancers presented between the fourth and six decade of life (Figure 1) with a peak incidence in the 5th decade (37.3%). Cancers of the uterine cervix was the most common (n=120; 64.87%), followed by cancers of ovaries 44 (23.78%), corpus uteri 12 (6.49%), vulva (3.78%), and vagina 2 (1.08%) (Table I). Malignancy was not found in the myometrium and the fallopian tube.

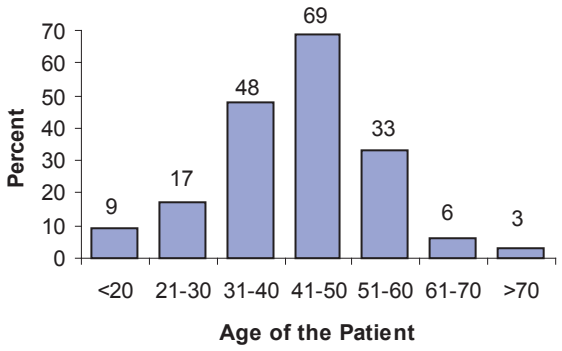


Figure 1. Age distribution of the patients

Table I: Relative frequency and age distribution of gynaecological cancers

| Site | No. | Percentage | Age | |
|---|---|---|---|---|
| | | | Age range | Mean (±SD) |
| Cervix | 120 | 64.87 | 25-85 | 46.64±10 |
| Corpus uteri | 12 | 6.49 | 35-55 | 41.58±10.04 |
| Vulva | 7 | 3.78 | 20-70 | 45.29±19.38 |
| Vagina | 2 | 1.08 | 4m-75 | 37.67±52.79 |
| Ovary | 44 | 23.78 | 7-60 | 37.16±14.66 |
| Total | 185 | 100.0 | 4m-85 | 43.91±12.84 |

Malignant tumors of the cervix uteri have a peak age of frequency in the fifth decade (Table II), with an age range of 35 to 55 years and mean age 46.64±10 years. Out of 120 cases of cervical cancers squamous cell carcinoma was 118 (98.33%) and adenocarcinoma was two (1.67%) (Table III). Sqamous cell carcinoma was also common in vulva (100%). One case of embryonal rhabdomyosarcoma was found in a girl of 4 months age.

Ovarian cancers have a uniform distribution between first to seventh decades with a peak age in the 5th decade of life. Serous cyst adenocarcinoma was the most common histological type and surface epithelial tumor constituted 54.55% (Table IV); 9% cases were seen below 20 years of age. Dysgerminoma was the second commonest group, among which the youngest patient was a girl of seven years. The mean age of presentation in epithelial cancers was 44.13 years while non-epithelial cancers were mainly observed in younger age group with a mean age of 21 years.

Among the cancers of corpus uteri endometrioid adenocarcinoma was the most common. The commonest affected age group was 4th decade with mean age 42.63 years. Four cases of choriocarcinoma was found in the endometrium.

Table II: Age distribution in different patterns of cancer

| Age | Cervix | Corpus uteri | Vulva | Vagina | Ovary |
|---|---|---|---|---|---|
| <20 | | | 1 | 1 | 7 |
| 21-30 | 6 | 2 | 1 | | 9 |
| 31-40 | 33 | 6 | 1 | | 7 |
| 41-50 | 55 | 1 | 1 | | 12 |
| 51-60 | 19 | 3 | 2 | | 9 |
| 61-70 | 5 | | 1 | | |
| >70 | 2 | | | 1 | |

Table III: Histopathological pattern of cervical, corpus uteri, vulval and vaginal cancer

| Site | Malignancy | No. |
|---|---|---|
| Cervix | Squamous cell carcinoma | 118 |
| | Adenocarcinoma | 2 |
| Corpus uteri | Endometrioid adenocarcinoma | 8 |
| | Choriocarcinoma | 4 |
| Vulva | Squamous cell carcinoma | 7 |
| Vagina | Squamous cell carcinoma | 1 |
| | Embryonal rhabdomyosarcoma | 1 |

Table IV: Histopathological pattern of ovarian cancers

| Histological type | No. | Percentage |
|---|---|---|
| Serous cystadenocarcinoma | 15 | 34.09 |
| Mucinous cystadenocarcinoma | 5 | 11.37 |
| Endometrioid adenocarcinoma | 3 | 6.82 |
| Clear cell adenocarcinoma | 1 | 2.27 |
| Dysgerminoma | 12 | 27.27 |
| Granulose cell tumor | 4 | 9.09 |
| Metastatic tumor | 4 | 9.09 |

**Discussion**

The age of the cancer patients of female genital tract ranged from 4 months to 85 years with a mean age 43.91±12.84 years. Most of the patients were in the age group of 41-50 years. Talukder et al in their study found mean age 45 years and maximum patients were in the 5th decade of life.[5]

The pattern of gynecological malignancies is different in various geographical areas. Cervical cancer is one of the leading cancers in women worldwide; 70% of new cases occur in developing countries.[2] This study shows that the cervix is the commonest site of malignant tumors of the female genital tract; it constitutes 64.87%. This correlates well with some local[5,6] and international studies[2]. Cancer cervix incidence varies with geographical region and ethnicity.[7] The proportion of cervical cancer however, low when compared with 71.4% from local study,[5] 80% reported in India[8] and 85.2% reported in Nepal [9].

Epidemiological studies have consistently indicated that the risk of cervical cancer is strongly influenced by measures of sexual activity.[1] Human papilloma virus (HPV) DNA is found in 99.7% of cervical cancers. HPV infection with high risk types 16 and 18 has been shown to be necessary factor in 70% cases in the development of cervical cancer.[10] Risk factors of HPV infection are multiple sexual partners, partners' multiple partners, early marriage and early sexual activity, high parity, cigarette smoking, poor hygiene, oral contraceptives and immunodeficiency states, e.g. HIV infection.[1] One or several of the risk factors might be the cause for the high frequency of cervical cancer in our country.

There is no data available on the prevalence of HPV infection in the general population or on the prevalence of different HPV types in cervical cancer cases in Bangladesh. However, in Southern Asia, near about 7.9% of women in the general population is estimated to harbor cervical HPV infection at a given time.[4] One study showed that the prevalence of HPV in sex workers of Bangladesh was 75.8%, whereas for the high-risk group it was 49.8%. Both HPV16 and HPV18 were present in 21% of the cases.[11]

Cervical cancer is a preventable disease. It is declining in the last three or four decades in most developed countries predominantly due to effective population based cervical screening programs, treatment of pre-invasive condition, decreased parity and better living condition.[1] Low rates are also observed in China, in western Asia and most of the Muslim countries, including Pakistan, Iran and Saudi Arabia.[2,12-15] In a study of gynecological cancer profile at the Rawalpindi Combined Military Hospital, less cigarette smoking in females, religious practices and male circumcision was thought to be some of the possible reasons for the low incidence of cervical cancer.[13] The same practices may be operative in other Muslim countries as well.

In Bangladesh, Government and some non-governmental organizations have taken programmatic steps towards controlling cervical cancer by developing cervical cancer screening program and approval of vaccination for the prevention of HPV16 and HPV18 induced cervical cancer. Unfortunately, these measures are not yet effective in significant reduction in the burden of cervical cancer. The frequency can be reduced by awareness program on the importance of Pap smear examination and the service made available and affordable to the populace.

In this study mean age at presentation of carcinoma cervix was 46.64±10 years, which is comparable to 45 and 46 years but differs from 50.3 and 59 years reported elsewhere.[1,5,12,16] Majority of the patients was in the 5th decade which is similar to other studies.[13,17] Jamal et al and Okeke et al found majority of the patients in the 6th decade of life.[12,18]

The commonest histopathological type of cervical cancer was squamous cell carcinoma (98.33%) and this was followed by adenocarcinoma (1.67%). The trend is similar to other studies.[1,5,12] Squamous cell carcinoma is pathogenetically associated with HPV. Adenocarcinoma is said to be increasing and up to 20% to 25% is reported in some series.[19]

Ovary was the second leading site among gynaecological malignancies at our center, similar to other nationa[15], Indian[8] and African studies[17,18]. The proportion it forms in this series, 23.78% is comparable to the 23.5% in a national study[5] and to the 22.2% and 25.3% in Nigeria20 and Ghana[21] respectively. It is the leading site reported from Pakistan and Tehran.[12-14] These tumors were seen in all age groups and 9% cases were seen below 20 years of age. Jamal et al also found this tumor in all age group and 3.6% cases were seen in the pediatric age group.[12] The mean age was 37.16±14.66 years which is similar to 37 years reported in another national study.[5]

Surface epithelial tumors formed the main histological group not only in this analysis but in other national[5] and international studies[1,13,17]. Serous cyst adenocarcinoma was the commonest cancer encountered by us as well by others,[1,5,12] whereas Ahmed et al[22] found mucinous cyst adenocarcinoma to be the commonest variety. Germ cell tumors were found more frequently in this study as well as in other studies.[5,12]

Endometrial malignancies were the third most common in this study, this agrees with many studies.[5,12,19] The incidence of this malignancy is higher in the more developed countries and lower in Asia and Africa.[1,8,13,17] It constitutes 6.49% of gynaecological malignancies in this series, which is comparable to other studies.[17,20,21] As many studies, endometrioid carcinoma is the main histopathologic type in this study.[5,9,12] Others found choriocarcinoma as the commonest lesion of corpus uteri.[20]

Vulval and vaginal malignant tumors were uncommon in this study which agrees with many reports.[2,12] However, Ullah et al found high rates of vulval and vaginal cancers, 17.8% and 27.7% respectively.[23] In coherence with others squamous cell carcinoma was the most common histopathologic type in the vulva.[1,9] The mean age, 45.29 years, is lower than that of other reported series.[9]

In conclusion, in this cross sectional study we found more cervical cancer than other gynaecological malignancies which was followed by cancers of ovary and uterine corpus. Most of the patients were in the 41-50 years age group. Squamous cell carcinoma was the most frequent malignant tumor of the cervix and vulva. Adenocarcinoma was the most common malignancy in ovary and corpus uteri. Cervical cancer is largely a preventable disease. There is the need to increase public awareness on the risk factors and the Government and non-governmental bodies establish sustainable national and regional cervical cancer screening programs and ensure HPV vaccine available and affordable to the women.

**Reference**

1. Ellenson LH, Pirog EC. The Female Genital Tract. In: Robbins and Cotran Pathologic basis of disease. 8th edn. Philadelphia: Elsevier Saunders, 2010; 1005-1063.

2. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, et al. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer 2013. Available at: http://globocan.iarc.fr. Accessed May 2014.

3. Akhter PS, Uddin MM and Sharma SK. Patterns of malignant neoplasm - a three years study. Bangladesh Medical Journal 1998; 27(2): 29-32.

4. WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre). Human papillomavirus and related cancers in Bangladesh. Fact sheet 2013 [Internet]. Available at: http://www.who.int/hpvcentre. Accessed May 2014.

5. Talukder SI, Haque MA, Alam MO, Huq MH, Roushan A, Jahan MK, et al. Gynaecological cancers in surgical specimens in Mymensingh, Bangladesh, 2006. Bangladesh J Pathol 2008; 23(1): 2-4.

6. Banu PA, Rukhsana N, Yasmin J, Nahar L, Malik SR. Analysis on the incidence, staging and treatment of carcinoma cervix at Delta Medical College and Hospital of Bangladesh. Delta Med Col J 2013; 1(2): 31-36.

7. Rastogi T, Devesa S, Mangtani P, Mathew A, Cooper N, Kao R, et al. Cancer incidence rates among South Asians in four geographic regions: India, Singapore, UK and US. Int J Epidemiol 2008; 37(1):147-160.

8. Chhabra S, Sonak M, Prem V, Sharma S. Gynaecological malignancies in a rural institute in India. J Obstet Gynaecol 2002; 22(4): 426-429.

9. Dhakal HP, Pradhan M. Histological pattern of gynaecological cancers. J Nepal Med Assoc 2009; 48: 301-305.

10. Walboomers JM, Jacobs MV, Manos MM, Bosch FX, Kummer JA, Shah KV, et al. Human papillomavirus is a necessary cause of invasive cervical cancer worldwide. J Pathol 1999; 189(1): 12-19.

11. Sultana S, Huq M, Alam A, Mitra DK, Gomes DJ. Prevalence and genotyping of human papillomavirus in female with high-risk behavior in Dhaka, Bangladesh. Bangladesh J Microbiol. 2008; 25(1):65-68.

12. Jamal S, Mamoon N, Mushtaq S, Luqman M, Moghal S. The pattern of gynecological malignancies in 968 cases in Pakistan. Ann Saudi Med 2006; 26(5): 382-384.

13. Mohyuddin S, Sultana N, Butt KA, Mohyuddin A. Patterns of gynaecological malignancies at a tertiary care hospital. Pakistan Journal of Medical and Health Sciences 2012; 6(1). Available at: http://pjmhsonline.com/JanMarch2012/patterns_of_gynaecological_malignancies.htm. Accessed October 2013.

14. Momtahen S, Kadivar M, Kazzazi AS, Gholipour F. Assessment of gynecologic malignancies: A multi-center study in Tehran (1995-2005). Indian Journal of Cancer 2009; 46(3): 226-230.

15. Koriech OM, Al-Kuhaymi R. Profile of cancer in Riyadh armed forces hospital. Ann Saudi Med 1994; 14(3): 187-194.

16. Ashraf T, Haroon S. Frequency of gynaecological malignancies and outcome at a tertiary care hospital. Professional Med J 2013; 20(5): 752-758.

17. Kyari O, Nggada H, Mairiga A. Malignant tumors of female genital tract in North Eastern Nigeria. East African Medical J 2004; 81(3): 142-145.

18. Okeke TC, Onah N, Ikeako LC, Ezenyeaku CCT. The frequency and pattern of female genital tract malignancies at the University of Nigeria Teaching Hospital, Enugu, Nigeria. Ann Med Health Sci Res 2013; 3(3): 345-348.

19. Vizcaino AP, Moreno V, Bosch FX, Munoz N, Barros-Dios XM, Parkin DM. International trends in the incidence of cervical cancer: I. Adenocarcinoma and adenosquamous cell carcinomas. Int J Cancer 1998; 75(4): 536-545.

20. Briggs ND, Katchy KC. Pattern of primary gynaecological malignancies as seen in a tertiary hospital situated in the River State of Nigeria. Int. J. Gynae. Obst. 1990; 31(2):157-161.

21. Nkyekyer K. Pattern of gynaecological cancers in Ghana. East African Medical Journal 2000; 77(10): 534-548.

22. Ahmad Z, Kayani N, Hasan SH. Histological pattern of ovarian neoplasm. J Pak Med Assoc 2000; 50: 416-419.

23. Ullah E, Lail RA, Taj N, Alam MI. Malignant and benign lesions of female genital tract - an experience at a tertiary care hospital in Bahawalpur - Pakistan. Biomedica 2012; 28(2): 149-152.