

Stages of Gynaecological Cancers at the Time of First Presentation at a Large Cancer Hospital in Pakistan: An Observational Study

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Keywords

Gynaecologic oncology · Cancer in women · Female reproductive system · Malignant tumours · Pakistan

Abstract

Objectives: The aim was to study the types of gynaecological cancers and their stages at the time when patients first presented at the cancer registry of a major cancer hospital. **Methods:** This observational study was carried out in a large cancer hospital in Pakistan. We analysed secondary data on new cases of gynaecological cancer without age restriction of the patient. Fully anonymised data were obtained retrospectively from the cancer registry for 3 years from 01 January 2018 to 31 December 2020. Data were analysed for frequencies and descriptive statistics using SPSS. **Results:** A total of 285 new cases of gynaecological cancer were registered in the cancer registry during the study period. The patients had a median age of 52 years (mean 51.3, SD 15.7), and all had no education. Ovarian cancer was the most common gynaecologic cancer (57.9%, $n = 165$), followed by cervical cancer (25.9%, $n = 74$), uterine (endometrial) cancer (10.9%, $n = 31$), vaginal cancer (3.9%,

$n = 10$), and choriocarcinoma (1.4%, $n = 4$). About 32% of the patients had stage 1 cancer ($n = 89$), 37.5% had stage 2 cancer ($n = 105$), 25.7% had stage 3 cancer ($n = 72$), and 5% had stage 4 cancer ($n = 14$). **Conclusion:** Ovarian, cervical, uterine, and vaginal cancers are the most prevalent gynaecological cancers. In Pakistan, women with gynaecological cancers, especially those who are uneducated and live in rural areas, attend tertiary care cancer hospitals with advanced cancers that can have a poor prognosis.

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Introduction

Gynaecological cancers are the third most common malignant cancer in females [1]. In developing countries, there is a higher risk of gynaecological cancers and the associated mortality rate is also higher due to lack of public awareness, improper cancer screening, and late presentation [2, 3]. The lack of knowledge of cancer in patients and the poor healthcare seeking behaviour contribute to the cancer burden [4]. Cancers of the

reproductive system in women up to 65 years of age account for about 25% of all new cancers diagnosed in developing countries, compared to 16% in the developed world [5]. Recent trends show a shift in the burden of cancer from developing to underdeveloped countries [6]; however, data on cancers affecting women, particularly the types and stages of cancers of the reproductive system, are rarely reported in these countries. Women in poor nations, particularly those living in rural regions, rarely attend hospitals for healthcare due to social, cultural, and economic reasons, including a lack of education, poverty, and a gender prejudice in seeking healthcare [4]. As a result, women in these countries suffer from different chronic diseases, including cancer, and by the time they reach a tertiary care hospital, it is too late to provide effective treatments and management because their cancers have spread and their conditions have deteriorated, resulting in poor outcomes [7].

The pattern of gynaecological malignancies varies geographically due to changes in environment, lifestyle, genetics, and socioeconomic background [8]. Cancers of the female reproductive system, specifically cancers of the ovaries and uterus, are very common in South Asian women [9].

Female reproductive system malignancies are common in Pakistan [10], and recent investigations reveal an increasing trend [11]. Several research studies on malignancies of the reproductive system in women have been conducted in Pakistan [10–12], but these studies reflect either cumulative numbers or trends in cancer prevalence [10, 11]. There is a need of research that provides adequate knowledge regarding the stages of cancer in the female reproductive system, which is critical for cancer treatment. For example, if people get cancer treatment at an early stage of cancer, their outcomes and prognosis are significantly better than those who seek healthcare late, either at an advanced stage of cancer or at the terminal stage, which frequently results in death [13]. The aim of this research was to study the types of gynaecological cancers and their stages at the time of the first presentation at a large cancer hospital.

Methods

Patients and Study Design

This cross-sectional observational study uses secondary data on cancers of the reproductive system in females. The inclusion criteria were all new female patients of any age with cancer of any organ in the reproductive system at the first appointment/registration at the cancer registry of a large cancer hospital in Pakistan.

Table 1. Patients' socio-demographic characteristics

Characteristic	Frequency	Percent
Age		
14–20	8	2.8
21–30	22	7.7
31–40	45	15.8
41–50	64	22.5
51–60	67	23.5
61–70	48	16.8
71–80	24	8.4
81–89	7	2.5
District of residence		
Jamshoro	70	24.6
Tando Muhammad Khan	49	17.2
Matiari	37	13.0
Naushahro Feroze	35	12.3
Dadu	31	10.9
Hyderabad	29	10.2
Umer Kot	12	4.2
Badin	8	2.8
Mirpur Khas	7	2.5
Larkana	2	0.7
Sukkur	2	0.7
Tando Allahyar	2	0.7
Karachi	1	0.4
Year of registration		
2018	105	36.8
2019	96	33.7
2020	84	29.5

Data Collection and Analysis

Fully anonymized data were obtained from the cancer registry at a large cancer hospital in the province of Sindh in Pakistan. Data were provided for a 3-year period from 01 January 2018 to 31 December 2020 on a predesigned template designed in Microsoft Excel. Data included the date of first registration at the cancer registry, the patient's age, highest education level, and district of residence, the organ affected by the cancer, and the stage of the cancer. Data were analysed by frequencies and descriptive statistics using SPSS, version 28 for Windows (IBM Corp. Ltd.).

Results

Patient Characteristics

A total of 285 new patients with gynaecological cancers were registered with the cancer registry at the cancer hospital between 1 January 2018 and 31 December 2020. Patients' median age was 52 years (mean 51.3; SD 15.6 years), and their minimum and maximum ages were 14 and 89 years, respectively. The education level of all patients was reported as

Table 2. Gynaecological cancers by stages of cancer and age of patients

Cancer by organ	Stages of cancer						Age, years
	count, n (%)	stage 1, n (%)	stage 2, n (%)	stage 3, n (%)	stage 4, n (%)	stage unknown, n (%)	range
Ovarian	165 (57.9)	56 (34)	63 (38)	36 (22)	8 (5)	2 (1)	14–85
Cervical	74 (25.9)	22 (30)	26 (35)	22 (30)	4 (5)	0	28–88
Uterine	31 (10.9)	9 (29)	14 (45)	7 (23)	1 (3)	0	18–89
Vaginal	11 (3.9)	2 (18)	2 (18)	6 (55)	1 (9)	0	30–79
Choriocarcinoma	4 (1.4)	0	0	1 (25)	0	3 (75)	18–32
Total	285 (100)	89 (31)	105 (37)	72 (25)	14 (5)	5 (2)	14–89
Age, years							
Mean (standard deviation)	51.3 (15.6)	49.7 (15.1)	50.8 (13.4)	52 (18.3)	62.4 (12.2)		
Median	52	50	50.5	53.5	65		

“uneducated.” Data on the district of residence showed that the patients came from thirteen districts in Sindh province in Pakistan (Table 1).

Cancers by Reproductive Organ and Stage of Cancer

Table 2 shows cancers by reproductive system organs and stages of cancer in the order of higher to lower frequency. The most common gynaecological cancer was ovarian cancer (57.9%), followed by cervical cancer (25.9%) (Table 2). Data about the stage of cancer at the time of the first appointment/registration at the cancer registry showed that the highest number of patients (37%) presented with cancer stage 2, and 30% of the total patients had either stage 3 cancer or stage 4 cancer. Analysis by stages of cancer showed that the highest proportion of ovarian, cervical, and uterine (endometrial) cancers were stage 2 cancers, while the highest proportion of vaginal cancers was stage 3 cancer (Table 2). The median and mean age of patients by type of cancer and stage of cancer are also shown in Table 2.

Discussion

We investigated new cases of gynaecological malignancies and the stages of these cancers in patients registered at a large tertiary care cancer hospital in Sindh province of Pakistan. Ovarian cancer was the most common gynaecological cancer followed by cervical cancer, which is in line with earlier studies that looked at trends of gynaecological cancers in Pakistan from 2002 to 2011 [1] and from 2015 to 2019 [13]. The pattern of cancers differs between countries due to differences in the genetics of populations and other factors such as social, economic, cultural, and lifestyle characteristics [3]. For example, cervical cancer was the

second common gynaecological cancer in our study and earlier studies conducted in Pakistan [1, 13], while it was the most frequent gynaecological malignancy reported in earlier studies from other countries such as Bangladesh [7], India [14], and Ghana [15]. However, a very recent study reported cervical cancer as the second most common cancer in women globally [16].

In our study, most of women with ovarian tumours were registered with stage 1 or stage 2 cancers, which is contrary to previous research that showed 75% of ovarian cancers were diagnosed at an advanced stage of cancer [17]. However, earlier studies have reported that the diagnosis of cancers in early stages is 20–50% of cancers in developing countries compared to about 70% of cancers in developed countries [18]. In our study, the diagnosis of gynaecological cancers of stage 1 cancer was 18–34% and stage 2 cancer was 18–45%. A study conducted in India reported about 63% of cervical cancers of stages 1 and 2 of cancer [14], whereas in our study, 65% of cervical cancers were of stages 1 and 2 of cancer. The diagnosis of higher percentage of early-stage cancers found in our study could be that patients visited their family physicians, probably with an early stage cancer, with some medical complaints and were clinically investigated, which could have confirmed cancer; hence, the patients were quickly referred to the cancer hospital from where we obtained secondary data. This hospital is a tertiary care cancer hospital in the public sector and the treatment is free for all citizens; hence, patients with all types of cancer are referred to it for treatment.

Our findings also showed that patients with a higher stage cancer were more likely to be older compared to patients with a lower stage cancer. We found that patients with stage 4 cancers had the median age of 65 years and those with stage 1 cancers had the median age of 50 years

(Table 2). Our findings also revealed that patients with vaginal cancers were older (median age 69 years) compared to patients with uterine cancers (median age 56 years), cervical cancers (median age 55 years), and ovarian cancers (median age 46 years). These findings are similar to earlier evidence from Pakistan [1, 13]. Other socio-demographic factors such as gravidity, parity, occupation, marital status, age at first marriage, number of marriages, and methods of contraception used are also important risk factors of gynaecological cancers [13, 14, 19, 20]. However, we could not assess the association of these factors with gynaecological cancers because data on these parameters was not available to us since we used secondary data from a cancer hospital registry, and we did not have access to patients' medical records either.

Our study showed that patients with gynaecological cancers typically visit specialist tertiary cancer treatment centres for the first time after their cancers have progressed to stage 2 or higher, which is consistent with earlier studies [7, 14, 21]. Research shows that late diagnosis of cancers results in delayed treatments [22], whereas when a cancer is detected at an early stage and treated, there are better outcomes and a favourable prognosis, including greater odds of survival and quality of life [23]. Thus, early diagnosis and successful treatment, as well as thorough follow-up, are critical for managing patients with gynaecological malignancies [24]. However, in lower middle-income countries like Pakistan, women with gynaecological cancers do not undergo any cancer screening programs due to poverty and illiteracy [25, 26]. They are commonly treated by general practitioners [22] and they are often referred to cancer specialists with an advanced stage of cancer [22, 25, 26], when it is too late and the prognosis is poor [13].

Our findings suggest that women, especially those in rural and poor societies and communities, do not have early access to specialized healthcare, especially to diseases such as cancer, and that specialized cancer care is more difficult to access. Rapid access to treatment facilities is critical to achieving better outcomes [27]. However, in countries such as Pakistan, cancer patients lag behind in cancer treatment due to various socioeconomic, cultural, and structural factors [14, 28]. For example, paying out-of-pocket for treatment, poverty, lack of health insurance, and transport costs affect access to healthcare and treatment [29]. These factors may have influenced the patients in our sample, all of whom were uneducated.

In Pakistan, there are very few specialized cancer treatment facilities, and there is a lack of public awareness of cancer [30]. Cancer treatment facilities are mainly located in large cities, with most facilities in the private

sector. The costs are so high that they are beyond the capacity of people in poor communities, especially rural women with high poverty rates and low levels of education [14]. Cancer screening helps in detecting cancer at an early stage, which is necessary for early intervention and may lead to better outcomes [31]. Therefore, it is imperative for countries like Pakistan to introduce cancer screening programs, especially for vulnerable groups such as women and those living in rural areas where health facilities are scarce, people are poor, and education levels are low [32]. Primary care physicians (including family doctors, general practitioners, and medical officers) can also play a major role by referring patients with suspected cancer cases to tertiary care cancer hospital(s) as soon as they provisionally diagnose a cancer case [33].

Study Limitations

This study has some limitations. First, secondary data on gynaecological cancer were available only for 3 years and obtained from one large cancer hospital, which might not show the actual burden of gynaecological cancers in the local population. Second, we used secondary data which did not include data on gynaecological cancers' risk factors including socio-demographic variables, e.g., marital status, age at first marriage, number of marriages, and reproductive variables, e.g., gravidity, parity, and contraception used.

Conclusions

Ovarian, cervical, uterine, and vaginal cancers are the most prevalent gynaecological cancers. Women with gynaecological malignancies in developing countries like Pakistan, particularly those who are illiterate and live in rural areas, visit tertiary care cancer hospitals with advanced cancers that can have a poor prognosis.

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Statement of Ethics

This study was approved by the Institutional Review Board of the Liaquat University of Medical and Health Sciences, Jamshoro, Sindh, Pakistan (Ref. No. LUMHS/REC/-970, date: 26 November 2020). Informed consent is not applicable because we have analysed secondary data, which was obtained in a fully

anonymized format from the cancer registry at the Nuclear Institute of Medicine and Radiotherapy (NIMRA) Cancer Hospital. We had neither any interaction with the patients nor access to their medical records. All data have been analysed and reported in an aggregated form, and no patient is identifiable in any form.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Meharunnissa Khaskheli: conceptualisation, methodology, data collation and cleaning, and drafting of the manuscript. Shahla Baloch, Shamsunnissa Khaskheli, and Ramsha Zafar Durrani: review and intellectual input. Naseema Jhatial: methodology, data collection/curation, review, and intellectual input. Syed Ghulam Sarwar Shah: conceptualisation, methodology, formal analysis of data and interpretation, drafting, editing, and updating of the manuscript. All authors approved the manuscript.

Data Availability Statement

All data generated or analysed during this study are included in this article. Further enquiries can be directed to the corresponding author.

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