RESEARCH COMMUNICATION

Gynecological Malignancies: Epidemiological Characteristics of the Patients in a Tertiary Care Hospital in India

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Abstract

> __Background__: This cross-sectional observational study was undertaken to identify the epidemiological characteristics of patients with gynecological malignancies in India, in relation to gynecological cancer risk. __Methods__: In the gynecology out-patient clinic of a tertiary care hospital in Kolkata, India, the patients with suggestive symptoms of gynecological malignancies were screened. One hundred thirteen patients with histopathologically confirmed gynecological malignancies were interviewed. __Results__: More than two-thirds of the cases (69.0%) occurred in the age range of 35-64 years and the same proportion of patients was from rural areas. Almost all the patients were "ever-married" (96.5%). More than half (54.9%) were illiterate/just literate. Nearly two-thirds (64.6%) were parity 3 or higher. Among the 18 patients with history of multiple sexual partners of the husband, 94.4% (17) were suffering from cervical malignancy, along with all the 3 patients with history of STD syndromes (sexually transmitted diseases) of their husbands. No one had given a history of condom use by her husband. Most of the patients (91.1%) used old / reused cloth pieces during menstruation. __Conclusions__: There is a need to increase awareness among women and the broader community about different epidemiological factors that may be responsible for increased risk of gynecological malignancies.

__Keywords:__ Gynecological malignancies - women - epidemiological characteristics - cancer risk - awareness - India

Introduction

Gynecological malignancies include cancers of the ovary, cervix, body of the uterus, vulva and vagina; and also gestational trophoblastic neoplasia (GTN) (Senate Community Affairs References Committee, Commonwealth of Australia, 2006; Department of Health, Social Services and Public Safety, Northern Ireland, 2002; Dutta, 2003). These are significant causes of morbidity and mortality in women throughout the world (Siyal et al., 1999).

Gynecological malignancy is an important public health issue in the developing world. The major concerns in this regard are lack of cancer awareness in the community, uncertain epidemiology, variable pathology and lack of proper screening facilities. Delayed presentation of the cases always results in poor outcome, which could be averted by early detection of these cancers and prompt institution of treatment. Therefore, prevention and early detection of cancer needs more attention. Adequate knowledge about cancer influences early detection and treatment seeking pattern (Leydon et al., 2000; De Nooijer et al., 2002). Over the years, irrespective of social class, the number of gynecological cancers is increasing, with more cases at the younger age in India (Chhabra et al., 2002).

As a major public health problem, more than 80%

of the cervical cancer cases occur in the developing countries (Sankaranarayanan & Ferlay, 2006) and it tends to present about 15 years earlier than it does in the developed countries. It is therefore postulated that a more aggressive variant of the disease probably occurs in this environment. Many cases remain undiagnosed. Other peculiar negative trends observed are late presentation and resultant very low five-year survival data. WHO estimates that the contribution of cervical cancer to adult female death is 35% (Ayinde et al., 2004). India's cervical cancer age-standardized incidence rate (30.7 per 100,000) and age-standardized mortality rate (17.4 per 100,000) are the highest in South-Central Asia (Ferlay et al., 2004). Ovarian cancer has the highest fatality-to-case ratio of all the gynecological malignancies (Berek, 2002), and it is also of public health importance (Laurvick et al., 2003). However, endometrial carcinoma and vulval / vaginal carcinoma are usually the malignancy of elderly women, thereby raising the mortality significantly. It has been reported in earlier literature by the same authors that, in the developing countries like India, poor knowledge about these cancers and health care seeking behavior of the patients add to this burden significantly (Sarkar et al., 2011).

Trials to improve survival not only require more accurate staging and diagnosis, but also the identification of more significant prognostic factors, which may help in identifying low- and high-risk groups of patients (Tropé

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& Makar, 1991). Although several effective measures are available to reduce the risk of these cancers, very few women are aware of them. Without this information, women cannot make informed decisions about their health (Grimes & Economy, 1995).

Cancers of the endometrium, ovary and cervix share certain characteristics. However, etio-pathogenesis of all the gynecological malignancies is yet to be explored. Even though the etiologic factors are generally environmental, the exact cause of each gynecological cancer is not known (Senate Community Affairs References Committee, Commonwealth of Australia, 2006). Worldwide, cancer incidence rates vary widely between different geographic regions and ethnic groups. There is a need to study the epidemiological factors that may be responsible for the variations in cancer risks. In India, the documentation of the epidemiological factors for all the gynecological malignancies is scarce and merits further investigations.

With the above background, this study was undertaken with the following objectives:1) To find out the socio-demographic, reproductive, behavioral and lifestyle characteristics of the patients suffering from the histopathologically confirmed gynecological malignancies. 2) To find out the presence of other epidemiological characteristics in relation to gynecological cancer risk among the patients.

Materials and Methods

This hospital-based cross-sectional observational study was conducted in the gynecology out-patient clinic, Department of Obstetrics and Gynecology, Nilratan Sircar Medical College and Hospital, a tertiary care hospital in Kolkata, West Bengal, India. The duration was one year, from May 2006 to April 2007 and covered newly registered patients with gynecological morbidity of variable severity, attending the gynecology out-patient clinic.

Sampling, the number of days available for the data collection was two fixed days each week, which were chosen by lottery method. Thus, Friday and Saturday were chosen. According to the previous records (2002-2003, 2003-2004 and 2004-2005), the total number of gynecological malignancy patients reported annually on Friday and Saturday was on an average 215, among the average total number of 5126 newly registered patients. Therefore, the expected percentage of the patients with gynecological malignancy, based on the previous records, was calculated as 4.2%, among the total new gynecological morbidity cases on Friday and Saturday.

As the expected number of patients with gynecological morbidity during the period of study, based on the previous records, was approximately 4272, around 50% of these patients, i.e. 2136 were proposed to be selected for the study, with random selection of the first patient and then every alternate patient. However, it was possible to cover 2141 patients during the period of study.

Study Tools, 1) A pre-designed and pre-tested checklist and a pre-designed and pre-tested schedule, 2) Hospital records, 3) Past health records of the patients, 4) Investigation reports, particularly histopathology reports,

5) Cusco's bivalve self-retaining vaginal speculum, 6) Stethoscope and sphygmomanometer.

Study Technique, 1) Interview method, 2) Clinical examination.

Methodology, permission was obtained from the hospital authority. The checklist and the schedule were drawn up in English, translated in Bengali (local language) and back translated in English to check the translation. Pre-testing of the checklist and the schedule were done in the gynecology out-patient clinic of the same hospital before starting of the study on 10 patients and accordingly necessary modifications were made and these were finalized. The gynecology out-patient clinic was visited as said. The patients with the symptoms suggestive of gynecological malignancies were screened out. Presence of at least two suggestive symptoms was considered for inclusion of the patients. The symptoms considered for screening were contact bleeding, irregular, heavy or prolonged vaginal bleeding, postmenopausal bleeding, excessive, offensive with or without blood stained vaginal discharge, lump in abdomen, abdominal distension or discomfort, vulval growth. Informed consent to participate in the study was obtained from all the eligible patients who agreed to cooperate in the physical examination and necessary investigations. Necessary examinations and investigations especially histopathological examination were done for confirmation of diagnosis. The checklist was used for screening and the schedule was used for the patients with histopathologically confirmed gynecological malignancies. The schedule consisted of few sections, i.e. general information, detailed history (menstrual history including menstrual hygiene, obstetrical, medical, surgical, family and personal history), presenting symptoms, clinical examination findings, histopathological examination reports, definitive diagnosis with FIGO staging of gynecological malignancies and finally in-depth interview questions regarding knowledge about gynecological malignancies and health care seeking behavior of the patients.

Data obtained were collated and analyzed statistically by simple proportions and tests of significance (chi-square test), as and when necessary. As the study population was screened out to identify the possible cases of gynecological malignancies on the basis of certain symptoms, few cases of gynecological malignancies not having the suggestive symptoms might have been missed. Only those who who agreed to participate in the research were included. Care has to be taken not to extrapolate the findings of this study to all women suffering from gynecological malignancies in the community.

Results

During the study period, among the 2141 gynecology outpatients, 483 patients (22.6%) were suffering from the symptoms suggestive of gynecological malignancies. 6 patients (0.3%) were lost to follow up. Therefore, 477 patients (22.3%) could further be studied and the diagnosis of all of them was confirmed by histopathology. Finally, the diagnosis of 113 patients (5.3%) was confirmed as gynecological malignancies, of which cervical malignancy

Table 1. Distribution of Patients with Gynecological Malignancies According to Socio-Demographic Characteristics (n =113)

Characteristics	Cervix $(n_1=70)$	Ovary $(n_2=27)$	Endometrium $(n_3=6)$	Vulva $(n_4=2)$	Vagina $(n_5=2)$	GTN $(n_6=6)$	Total $(n=113)$
Age (Years)							
≤19	-	2(7)	-	-	-	1(17)	3(3)
20-34	8(11)	6(22)	-	1(50)	1(50)	3(50)	19(17)
35-49	28(40)	10(37)	2(33)	1(50)	1(50)	1(17)	43(38)
50-64	26(37)	6(22)	2(33)	-	-	1(17)	35(31)
≥65	8(11)	3(11)	2(33)	-	-	-	13(12)
Religion							
Hindu	67(96)	22(82)	6(100)	2(100)	2(100)	6(100)	105(93)
Muslim	3(4)	5(19)	-	-	-	-	8(7)
Place of Residence							
Rural[a]	51(73)	16(59)	2(33)	2(100)	1(50)	6(100)	78(69)
Urban[b]	19(27)	11(41)	4(67)	-	1(50)	-	35(31)
Marital Status							
Married	46(66)	17(63)	3(50)	2(100)	2(100)	6(100)	76(67)
Single	1(1)	3(11)	-	-	-	-	4(4)
Widowed	23(33)	7(26)	3(50)	-	-	-	33(29)
Literacy Status							
Illiterate[c]	37(53)	11(41)	2(33)	1(50)	-	-	51(45)
Literate[d]	7(10)	1(4)	2(33)	-	-	1(17)	11(10)
Primary[e]	12(17)	2(7)	-	-	2(100)	1(17)	17(15)
Middle[f]	7(10)	7(26)	2(33)	1(50)	-	3(50)	20(18)
Secondary[g]	7(10)	6(22)	-	-	-	1(17)	14(12)
PCI of Family (Rs. per Month)							
<400	33(47)	15(56)	2(33)	1(50)	1(50)	3(50)	55(49)
≥400	37(53)	12(44)	4(67)	1(50)	1(50)	3(50)	58(51)

* 'Figures in the parentheses indicate percentages, [a]Rural: Panchayat area. [b]Urban: Municipality area. [c]Illiterate: Those who cannot read or write. [d]Just literate: Those who can only sign their name. [e]Primary: Grades I to IV. [f]Middle: Grades V to VIII. [g]Secondary and above: Grades IX, X and above

Table 2. Distribution of Patients with Gynecological Malignancies According to Reproductive Characteristics (n =113)

Characteristics	Cervix	Ovary	Endometrium	Vulva	Vagina	GTN	Total
Parity							
0[a]	1(1)	5(19)	2(33)	-	-	2(33)	10(9)
1	2(3)	2(7)	-	-	-	1(17)	5(4)
2	12(17)	9(33)	-	1(50)	1(50)	2(33)	25(22)
3	14(20)	4(15)	2(33)	1(50)	1(50)	-	22(20)
≥4	41(59)	7(26)	2(33)	-	-	1(17)	51(45)
Total	70(100)	27(100)	6(100)	2(100)	2(100)	6(100)	113(100)
Mean	4.1	3.0	2.3	2.5	2.5	2.3	3.6
(±S.D)	(±1.9)	(±3.0)	(±1.9)	(±0.7)	(±0.7)	(±3.4)	(±2.3)
Age at Marriage (Years)							
10-14	24(35)	7(29)	-	1(50)	-	1(17)	33(30)
15-19	42(61)	11(46)	5(83)	1(50)	2(100)	4(67)	65(60)
20-24	3(4)	3(13)	1(17)	-	-	1(17)	8(7)
≥25	-	3(13)	-	-	-	-	3(3)
Total[b]	69(100)	24(100)	6(100)	2(100)	2(100)	6(100)	109(100)
Mean	15	17	18	16	18	17	16
(±S.D)	(±2.6)	(±4.9)	(±2.0)	(±4.2)	(±0.7)	(±2.6)	(±3.3)
Age at First Childbirth (Years)							
≤14	6(9)	2(9)	-	-	-	1(25)	9(9)
15-19	43(62)	12(55)	2(50)	1(50)	1(50)	2(50)	61(59)
20-24	20(29)	4(18)	2(50)	1(50)	1(50)	1(25)	29(28)
≥25	-	4(18)	-	-	-	-	4(4)
Total[c]	69(100)	22(100)	4(100)	2(100)	2(100)	4(100)	103(100)
Mean	18	20	20	18	19	18	18
(±S.D)	(±2.6)	(±4.8)	(±0.6)	(±3.5)	(±1.4)	(±2.5)	(±3.2)

[a]Includes 4 unmarried patients, [b]Excludes 4 unmarried patients, [c]Excludes 4 unmarried and 6 nulliparous patients.

Nearly 90% patients with ovarian malignancy were also "ever-married" in the present study.

More than half of the patients with gynecological malignancies (62 patients or 54.9%) were illiterate / just literate. Nearly two-third (62.9%) of the patients with cervical malignancy were illiterate / just literate, whereas almost half of the patients (48.2%) with ovarian malignancy had education grade V and above.

According to the median value of the per capita monthly income (PCI) of family of the patients, which was Rs. 400, the patients with gynecological malignancies had been divided into two groups. Patients were almost equally distributed into two groups. Median value of PCI was Rs. 400 and mean value was Rs. 543 with a range of Rs. 100 - 2500.

Table 2 depicts the reproductive characteristics of the patients. Nearly two-third of the patients with gynecological malignancies (73 patients or 64.6%) were of parity 3 or higher with mean parity of 3.6. More than three-fourth of the patients (78.6%) with cervical malignancy were of parity 3 or higher with mean of 4.1. The proportion of patients with cervical malignancy increased with increasing parity. Among 10 patients with parity 0 (zero), 5 of them had ovarian malignancy and 2 each had endometrial malignancy and GTN. Mean parity of ovarian cancer patients was 3.0 and that of endometrial malignancy was 2.3.

Among 109 "ever-married" patients with gynecological malignancies, age at marriage of most of the patients (98 patients or 89.9%) was in the age group of 10-19 years

was the commonest (70 out of 113 patients or 61.9%), followed by ovarian malignancy (27 out of 113 patients or 23.9%).

Table 1 depicts the socio-demographic characteristics of the patients with histopathologically confirmed gynecological malignancies. More than two-third of the patients (78 out of 113 patients or 69.0%) were in the age range of 35-64 years with mean age of 45.8 years. Maximum number of the patients (43 patients or 38.0%) was in the age group of 35-49 years. More than three-fourth (54 out of 70 patients or 77.2%) of the cervical cancer cases were in the age range of 35-64 years with mean of 48.1 years. Ten out of 27 ovarian cancer cases (37.1%) were found between the ages of 35 and 49 years with mean of 43.3 years. The mean age of the patients with endometrial cancer was 53.0 years.

Most of the patients (105 patients or 92.9%) with gynecological malignancies were Hindus. Only 8 patients (7.1%) were Muslims. More than two-third of the patients with gynecological malignancies (69.0%) and nearly three-fourth of the patients (72.9%) with cervical malignancy had come from rural areas.

Almost all the patients with gynecological malignancies (109 patients or 96.5%) were "ever-married", i.e. currently married or widowed or separated. Among 4 unmarried patients, three were suffering from ovarian malignancy.

Table 3. Distribution of Patients with Gynecological Malignancies According to Behavioral and Lifestyle Characteristics (n =113)

Charac-teristics	Cervix (n₁=70)	Ovary (n₂=27)	Endome-trium (n₃=6)	Vulva (n₄=2)	Vagina (n₅=2)	GTN (n₆=6)	Total (n=113)
Tobacco Chewing	19(27)	7(26)	2(33)	1(50)	1(50)	-	30(27)
Exposure to Passive Smoking	48(69)	11(41)	3(50)	2(100)	2(100)	2(33)	68(60)
Contraceptive Practice	30(43)	9(33)	3(50)	2(100)	1(50)	3(50)	48(43)
Material Used for Menstrual Hygiene Practice[a,b]							
Sanitary Pad	4(6)	4(15[c])	-	-	-	1(17)	9(8[d])
New Cloth	3(4)	1(4[c])	1(17)	-	1(50)	-	6(5[d])
Old / Reused Cloth	66(94)	22(85[c])	6(100)	2(100)	1(50)	5(83)	102(91[d])
Related to Husband[e]							
History of Multiple Sexual Partners of the Husband	17(25[f])	-	1(17)	-	-	-	18(17[g])
History of STD Syndrome of the Husband	3(4[f])	-	-	-	-	-	3(3[g])

* [a]Multiple responses, [b]n=112 (one patient was not attended menarche at the time of examination), [c]These percentages have been calculated with the denominator of 26, [d]These percentages have been calculated with the denominator of 112, [e]n=109 (excluding 4 unmarried patients), [f]These percentages have been calculated with the denominator of 69, [g]These percentages have been calculated with the denominator of 109.

with mean of 16.0 years. All the three patients with age at marriage of ≥25 years were suffering from ovarian malignancy. However, almost all the "ever-married" patients (66 out of 69 patients or 95.6%) with cervical malignancy were married in the age group of 10-19 years with mean of 15.4 years. The mean ages at marriage for ovarian cancer and endometrial cancer cases were 17.0 years and 18.3 years respectively.

Among 103 patients (excluding 4 unmarried and 6 nulliparous patients) with gynecological malignancies, more than two-third (70 patients or 67.9%) of the patients had given birth to their first child at the age of ≤19 years with mean age at first childbirth of 18.4 years. All the four patients with age at first childbirth of ≥25 years were suffering from ovarian malignancy. However, nearly three-fourth of the patients (49 out of 69 patients or 71.0%) with cervical malignancy had given birth to their first child at the age of ≤19 years with mean age at first childbirth of 17.9 years. The mean ages at first childbirth for ovarian cancer and endometrial cancer cases were 19.8 years and 19.5 years respectively.

Table 3 shows that more than one-fourth of the patients (30 patients or 26.6%) with gynecological malignancies had history of tobacco chewing. Five patients (4.4%) were former user. Twenty-five patients (22.2%) were current user. Out of 23 patients who were current regular user, 60.9% (14) patients were suffering from cervical malignancy. Most of the gynecological malignancy patients (80.0%) with history of tobacco chewing had used it for 10 years and more. Majority of the patients (60.2%) with gynecological malignancies had history of exposure

to passive smoking. More than two-third (68.6%) of the patients with cervical malignancy had also given history of exposure to passive smoking.

Overall 48 patients (42.5%) with gynecological malignancies had given history of contraceptive practice, i.e. use of oral contraceptive pills, copper T, tubectomy, or vasectomy of their husbands. No one had given history of condom use by her husband. Among 19 patients who had ever used oral contraceptive pills, 57.9% (11) patients were suffering from cervical malignancy.

Most of the patients (91.1%) with gynecological malignancies used old / reused cloth pieces during menstruation. Most of the patients (94.3%) with cervical malignancy also used old / reused cloth pieces during menstruation, whereas only 4 patients (5.7%) used sanitary pads and 3 patients (4.3%) used new cloth pieces. Both patients of vulval malignancy used old / reused cloth pieces. Majority of the patients (65.2%) with gynecological malignancies used only water for cleaning of external genitalia during menstruation. More than two-third (67.1%) of the patients with cervical malignancy used only water for cleaning purpose. Almost all the patients (98.2%) with gynecological malignancies stated that they took bath daily during menstruation. Most of the patients (88.4%) with gynecological malignancies cleaned external genitalia two to three times daily during menstruation. Both past and present history (i.e. during last menstruation) of the patients were taken for the assessment of menstrual hygiene practices.

Out of 109 "ever-married" patients with gynecological malignancies, husbands of 18 patients (16.5%) had multiple sexual partners and among them, 94.4% (17) patients were suffering from cervical malignancy. Among 109 "ever-married" patients with gynecological malignancies, husbands of 3 patients (2.8%) had history of STD syndrome (sexually transmitted diseases) that was treated. All of them had stated about history of genital ulcer of their husbands with urethral discharge. All these 3 patients were suffering from cervical malignancy.

Table 4 shows that only 20.4% patients with gynecological malignancies had some other associated medical condition. Four patients (3.5%) had history of diabetes, 2 of them were suffering from ovarian malignancy and 2 from endometrial malignancy. Three patients (2.7%) were obese, 2 of them had endometrial malignancy. Seventeen patients (15.0%) had history of hypertension and two patients had past history of pulmonary tuberculosis. All diabetic, hypertensive and tuberculosis patients were treated for these conditions, but obese patients were never treated of their obesity.

Only 33 patients (29.2%) with gynecological malignancies had past history of suggestive symptoms of reproductive tract infections (RTI) and 30 patients (26.5%) had history of ≥1 episode(s) in one year. The reported symptoms were abnormal vaginal discharge (33 patients or 100.0%), burning micturition (36.4%), abdominal pain (18.9%) and dyspareunia (3.0%) and two-third of them (22 patients or 66.7%) had not sought any treatment for these symptoms.

Nearly half of the patients (52 patients or 46.0%) with gynecological malignancies had a history of relevant

Table 4. Distribution of Patients with Gynecological Malignancies According to Other Epidemiological Characteristics (n =113)

Charac-teristics	Cervix $(n_1=70)$	Ovary $(n_2=27)$	Endome-trium $(n_3=6)$	Vulva $(n_4=2)$	Vagina $(n_5=2)$	GTN $(n_6=6)$	Total $(n=113)$
History of Associated Medical Condition							
	12(17)	6(22)	5(83)	-	-	-	23(20)
Past History Suggestive of RTI							
	21(30)	6(22)	4(67)	-	1(50)	1(17)	33(29)
Past History of Gynecological Surgery							
	29(41)	13(48)	2(33)	-	2(100)	6(100)	52(46)
Family History of Malignancy							
	11(16)	5(19)	-	1(50)	-	1(17)	18(16)

gynecological surgery, i.e. tubal ligation, hysterectomy, operation on the ovary, suction evacuation or check dilatation and curettage, simple vulvectomy, mastectomy-both simple and modified radical. However, almost half of the patients (48.2%) with ovarian malignancy had such history of gynecological surgery. 8 patients (7.1%) with gynecological malignancies had history of hysterectomy, 4 of them were suffering from cervical malignancy, 2 of them were suffering from endometrial malignancy and one each was suffering from ovarian malignancy and GTN. 5 patients (4.4%) had given history of operation on the ovary and all of them were suffering from ovarian malignancy. Six patients (5.3%) had history of suction evacuation or check D & C and all of them were suffering from GTN. Two patients with ovarian malignancy had given history of mastectomy, one of them had undergone modified radical mastectomy for breast malignancy.

Overall 18 patients (15.9%) with gynecological malignancies had given family history of any malignancy, i.e. breast, female genital organs, or other sites, whereas 5 patients (18.5%) with ovarian malignancy had such history.

Discussion

This study is an attempt to identify the epidemiological characteristics of the patients in relation to gynecological cancer risk in India. In this study, cervical malignancy was identified as the commonest gynecological malignancy (61.9%), followed by ovarian malignancy (23.9%). The mean age of the patients with gynecological malignancies was 45.8 years. The mean age of cervical cancer and endometrial cancer patients have been found to be 48.1 years and 53.0 years respectively, which are above the mean age of the patients with gynecological malignancies. In contrast to that, the mean age of ovarian cancer patients (43.3 years) lies below the mean age of the patients with gynecological malignancies. Chhabra et al. (2002) reported that nearly half (44.6%) of the gynecological malignancy cases occurred between the ages of 35 and 49 years. The mean age of cervical cancer cases was 45.7 years and 38.3% of ovarian cancer cases occurred between the ages of 35 and 49 years. A study done in Ghana (Nkyekyer, 2000) had shown that the largest proportion (70.0%) of gynecological cancers occurred in 40-69 years age group. The mean age for cervical carcinoma was

52.0 years while that for ovarian carcinoma 46.4 years and endometrial carcinoma 56.0 years. A study done in Larkana, Pakistan (Siyal et al., 1999) had reported that the average age of the patients with gynecological cancer was 46.5 years and the peak age group was in the fourth decade. All these studies bring out an almost similar picture in terms of age range and mean age of the patients with gynecological malignancies. A similar trend in terms of mean age at presentation for cervical, ovarian and endometrial cancer is also found. In this regard, the study by Nkyekyer (2000) is worth mentioning. However, in another hospital-based study done in Pakistan (Nasreen, 2002), cervical cancer was observed in younger age group (mean 46 years) than that of the ovarian and endometrial cancers (mean 48 years and 52 years respectively).

In the present study, most of the patients (92.9%) with gynecological malignancies were Hindus and most of the patients (69.0%) came from rural areas. Almost all the cervical cancer patients (95.7%) were Hindus. These observations are closely supported by two Indian studies (Chhabra et al., 2002; Sharma et al., 2005). It needs to be mentioned here that government run tertiary care hospitals in India mostly cater the patients from rural areas with low socio-economic background. This has been pointed out in an earlier paper by the same authors (Sarkar et al., 2011). In this light, it cannot be concluded with certainty that gynecological malignancies are more common in rural areas. In corroboration to the study done by Were and Buziba (2001) in Kenya, almost all the cervical cancer patients were "ever-married" (98.6%) in this study.

The observation in the present study that most of the cervical cancer patients (62.9%) were illiterate / just literate, is further supported by Kidanto et al. (2002) in a study done in Tanzania. Although, no definite relationship has been found in the present study between educational level and proportion of the patients with gynecological malignancies, it has been reported by the same authors in an earlier paper that the time of presentation at a tertiary care hospital after onset of the symptoms reduces with the increase in educational level of the patients (Sarkar et al., 2011), making the management of the disease easier.

Median value of PCI of family of the patients was Rs. 400 and mean value was Rs. 543 with a range of Rs. 100 - 2500. The mean PCI of family of the patients in this study is nearly one-fourth of that of India's value. Many women with low incomes may not have ready access to adequate health care services, which might lead to their late presentation in an appropriate health facility. This observation has been supported by the earlier studies and published report from South-East Asia (Chhabra et al., 2002; Rashid et al., 1998; Department of Health, Government of the Hong Kong Special Administrative Region, 2004).

In this study, no specific relationship has been found between reproductive characteristics and proportion of the patients with endometrial malignancy, vulval / vaginal malignancy and GTN. However, a relationship may exist between reproductive characteristics and proportion of the patients with cervical malignancy. The proportion of patients with cervical malignancy increased with increasing parity.

The observation of the present study, that most of the patients with gynecological malignancies were multiparous, corroborates with the studies done in different parts of the world (Chhabra et al., 2002; Nkyekyer, 2000; Were and Buziba, 2001; Kidanto et al., 2002; Rashid et al., 1998; Odukogbe et al., 2004). The studies from the developing countries along with the observations in the present study indicate that the patients with ovarian malignancy may also be multiparous alike the patients with cervical malignancy. However, the mean parity of ovarian cancer patients was found to be lower (1.9) in a study done in Ireland by Daly et al. (1989). As per medical literature, ovarian malignancy is more common amongst nulliparous (Dutta, 2003).

Among 109 "ever-married" patients with gynecological malignancies, most of the patients had an early marriage. This observation is true for cervical cancer cases also, which is closely commensurate with the studies done by Sharma et al. (2005) and Kidanto et al. (2002). A health report from Hong Kong (Department of Health, Government of the Hong Kong Special Administrative Region, 2004) had commented that women with sexual intercourse at an early age are at higher risk of cervical cancer than women with sexual experience later in life. The present study also brings about the fact that the early marriage is a predisposing factor for cervical cancer.

A good proportion of the 103 patients with gynecological malignancies had given birth to their first child at an early age. However, all the four patients with age at first childbirth of ≥25 years were suffering from ovarian malignancy. Mogren et al. (2001) in their study conducted in Sweden commented that increasing maternal age at first birth was associated with an increasing risk of endometrial and ovarian cancers, and with a decreased risk of cervical cancer.

A good proportion (60.9%) of patients who were current regular user of tobacco, was suffering from cervical malignancy. A considerable proportion (27.2%) of patients with cervical malignancy had history of tobacco chewing, which is in contrast to the study done by Sharma et al. (2005) in India where that figure was only 6%. This difference in findings may be due to the differences in place of study, population studied and methodology used. Majority of the patients (60.2%) with gynecological malignancies had history of exposure to passive smoking and that proportion was 68.6% in case of cervical malignancy. This finding is further supported by a health report from Hong Kong (Department of Health, Government of the Hong Kong Special Administrative Region, 2004), which stated that the risk for cervical neoplasia increased with exposure to environmental tobacco smoke.

Little less than half of the total number of patients with gynecological malignancies had reported the use of contraceptives. About 25% patients had history of sterilisation operation. More than half of the patients with history of ever use of oral contraceptive pills were suffering from cervical malignancy. These findings are in close agreement with that of the study done by Chhabra et al. (2002) in India which had shown that sterilisation had been the main birth control method used among the patients with gynecological malignancies. Other methods of contraception had hardly been used and reported barrier contraceptive use was almost nil. However, in contrast to the present study where 16.8% patients had ever used oral contraceptives, Chhabra et al. (2002) did not find any patient who reported ever use of oral contraceptives. Ever use of contraceptive was 22% among the cervical cancer patients in the study done by Were and Buziba (2001), in comparison to 42.9% in the present study. This difference in observations may be due to the differences in the methodology, study subjects, and place of study. In this study, only three patients (11.1%) with ovarian malignancy had ever used oral contraceptive pills. Similarly, Odukogbe et al. (2004) from Nigeria reported that only two patients with ovarian cancer (9.5%) had used the oral contraceptive pills.

Most of the patients (91.1%) with gynecological malignancies used old/ reused cloth pieces during menstruation and that proportion was 94.3% in case of cervical malignancy. The type of material used is one of the important components associated with menstrual practice and has a direct relation with menstrual hygiene. This has been reported in an earlier literature by the same author (Dasgupta & Sarkar, 2008). Juneja et al. (2003) commented that the Indian study revealed the risk associated with the use of unclear cloth was 2.5 fold higher for the development of CIN III (cervical intra-epithelial neoplasia) and malignancy as compared to the use of clean cloth or use of sanitary napkins. A report from WHO (1986) had also suggested genital hygiene to be an important component associated with cervical neoplasia.

Among the patients with history of multiple sexual partners of their husbands, 94.4% patients and among the patients with history of STD syndrome of their husbands, all the patients were suffering from cervical malignancy. According to the health report from Hong Kong (Department of Health, Government of the Hong Kong Special Administrative Region, 2004), while reporting on the role of the male in the causation of cervical cancer, it was found that the husbands of cases had significantly more sexual partners than the husbands of controls in most studies. Women who are not sexually active, rarely develop cervical cancer, while sexual activity at an early age with multiple sexual partners is a strong risk factor. Nearly all women with invasive cervical cancer have evidence of human papillomavirus (HPV) infection, which is one of the common sexually transmitted infections (Walboomers et al., 1999).

Only 29.2% patients with gynecological malignancies had past history of suggestive symptoms of RTI. The commonest symptom reported by them was abnormal vaginal discharge (100.0%). It has been reported in earlier literature by the same author that abnormal vaginal discharge is commonly present in RTI (Dasgupta & Sarkar, 2008) and poor menstrual hygiene is a very important risk factor for this ailment (Dasgupta & Sarkar, 2008). The same authors have also reported that abnormal vaginal discharge is the commonest presenting symptom of gynecological malignancies (Sarkar et al., 2010).

Overall eighteen patients (15.9%) with gynecological malignancies had given family history of any malignancy.

Five patients (18.5%) with ovarian malignancy had such history. This corroborates with a study done by Malik (2002) in Pakistan where 20% of the patients with epithelial ovarian cancer had a positive family history of cancer. In a similar study done by Nigam et al. (2005) in India, 12.5% patients had given a family history of cancer. Though, Odukogbe et al. (2004) reported that only one patient with ovarian cancer (4.8%) had a positive family history of cancer.

It can be concluded from the present study that apart from the family history, the factors like place of residence, marital status, female literacy, socio-economic status, parity, age at marriage, age at first childbirth, contraceptive practice, menstrual hygiene, habit of tobacco chewing, exposure to passive smoking, etc. may have effect on gynecological malignancies. Not only that, sexual practice of the husband is also of concern. In this light, enhancement of female awareness is important, where female literacy, media, health workers, primary care physicians, volunteer health promoters, etc. may hold promise. In addition, other family members including husbands and the broader community should be made aware of the disease. Further, case control studies should be undertaken to better understand the epidemiological factors for different gynecological malignancies. Future research should be undertaken in the community for further insight on prevention and early detection of gynecological malignancies.

Acknowledgements

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