RESEARCH ARTICLE

Descriptive Epidemiology of Common Female Cancers in the North East India - a Hospital Based Study

Manigreeva Krishnatreya[1]*, Aamal Chandra Kataki[2], Jagannath Dev Sharma[3], Pintu Nandy[1], Abhijit Talukdar[4], Gayatri Gogoi[1], Nazmul Hoque[1]

Abstract

> Background: Cancers of the breast, uterine cervix and ovary are common cancers amongst females of North East India. Not much is known about the descriptive epidemiology of these cancers in our population. The present retrospective analysis was therefore performed. Materials and Methods: The data set available at the hospital based cancer registry of a regional cancer center of North-East India, containing information on patients registered during the period of January 2010 to December 2012, was applied. A total of 2,925 cases of breast, uterine cervix and ovarian cancer were identified. Results: Of the total, 1,295 (44.3%) were breast cancers, 1,214 (41.5%) were uterine cervix and 416 (14.2%) ovarian cancer, median age (range) for breast, uterine cervix and ovary were 45 (17-85), 48 (20-91) and 45 years (7-80), respectively. Some 43.5% of cases with uterine cervix patients were illiterate, 5.4% and 5.7% stage I in breast and cervix respectively and 96.4% of ovarian cancers in advanced stage. Conclusions: Improvement of female education can contribute to increase the proportion of early stage diagnosis of breast and uterine cervix in our population. Any population-based intervention for the detection of cancers of breast, uterine cervix and ovarian cancer should be started early in our population.

Keywords: Breast cancer - ovarian cancer - uterine cervix cancer - North East India - stage at diagnosis - epidemiology

Introduction

Cancers of the breast, uterine cervix and ovary are common cancers seen amongst females. However, in our population esophageal, gall bladder and oral cancers are also seen common among others (National Cancer Registry Programme, 2013). Cancers specifically seen in females are cancers of the vulva, vagina, uterine endometrium, uterine cervix, ovarian cancers and gestational trophoblastic cancers. In India, by 2020 the number of gynecological cancers is going to be around 182,602 and breast cancers in both males and females will be around 100,000 (Takiar et al., 2010). This assumes significance in the context of the present study, as there is very little published literature on the descriptive epidemiological profile of gynecological cancers from the North-East India. Moreover, there are socio-economic factors like low literacy amongst females in our population, gender bias, cultural beliefs and traditions in different ethnic groups etc, contributes to the delays in diagnosis and treatment of cancers in female patients. Once the varied epidemiological profile of female cancers in our population is identified, it can guide in determining necessary cancer control measures for our population. In this retrospective analysis, we have tried to identify the descriptive epidemiology of common female cancers in our population.

Materials and Methods

The present study was done on the data of hospital based cancer registry at a regional cancer center of North-East India. The dataset consisted of patient information of 19,526 cancer patients, of which 41.1% were females. A total of 2925 cases of breast, uterine cervix and ovarian cancer were present in the data set for analysis. The dataset contained information of patients that were registered during the period of January 2010 to December 2012. Strict confidentiality was maintained while handling the dataset and no patient identifying information was shared with anyone. The cases were identified form the dataset by International Statistical Classification for diseases 10th revision (ICD-10). The cases were evaluated for age distribution, marital status, residential status, education and distribution of stage at diagnosis. Marital status of patients was broadly divided into married and unmarried. Patients who were divorced and widowed were also considered in the married category for the present analysis. The educational status of patients at our cancer registry was recorded according to the National Cancer

[1]Cancer Registry, Epidemiology and Biostatistics, [2]Gyenecologic Oncology, [3]Pathology, [4]Surgical Oncology, Dr.B Borooah Cancer Institute, Guwahati, India *For correspondence: mani_greeva@yahoo.co.in

Registry Programme of India under Indian Council of Medical Research. These were further clustered into illiterate (unable to read or write), literates (just able to read and write their names), qualified patients (primary, middle or secondary school level), and highly qualified groups (college and above) (Krishnatreya et al., 2013). Residential status was divided in two categories i.e., urban and rural. The stage at diagnosis for breast cancers was according to American Joint Committee on Cancer staging system (Edge et al., 2010). The International Federation of Obstetrics and Gynecology (FIGO) classification was used for staging uterine cervix and ovarian cancers.

Statistical analysis

Descriptive statistics and Chi square tests were used and results are presented as percentages up to single decimal place.

Results

Of 2925 cases of female cancers; 1295 (44.3%) were breast cancers, 1214 (41.5%) were uterine cervix and 416 (14.2%) were ovarian cancer patients.

Socio-demographic characteristics

In breast cancer, majority of patients (696, 53.7%) were seen in the age group from 35-49 years, in case of uterine cervix cancer, majority of patients (636, 52.4%) were seen in the age group form 40-54 years, and

significant 244 (58.7%) number of patients with ovarian cancer were in the age group from 35-54 years (Figure 1). The median age (range) for breast, uterine cervix and ovary were 45 years (17-85), 48 years (20-91) and 45 years (7-80) respectively. In cancers of the breast and ovary the proportion of married were 92.1% and 88.9% respectively. In uterine cervix cancers almost all (98.6%) the patients were married (Table 1). In the present analysis 72.3% of patients were from rural areas. Furthermore, the urban and rural differences in the occurrence of breast, uterine cervix and ovarian cancers were not significant (p=0.247). In the present analysis, the information on educational level was present in of 2824 (96.5%) patients. In breast cancer patients the numbers of qualified were 656 (52.5%), illiterate 380 (30.4%), literate 115 (9.2%) and highly qualified 99 (7.9%). In patient with cervical cancer
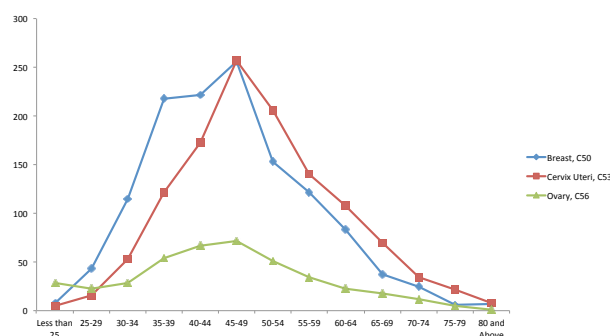

Figure 1. The Line Diagram Showing the Age Group Distribution

Table 1. It Shows the Socio-demographic Characteristic of the Patients in the Present Analysis

Variables		Breast, C50 N	%	Cervix Uteri, C53 N	%	Ovary, C56 N	%	Total N	%
Age Group	Less than 25	8	0.6	5	0.4	28	6.7	41	1.4
	25-29	43	3.3	16	1.3	23	5.5	82	2.8
	30-34	115	8.9	53	4.4	28	6.7	196	6.7
	35-39	218	16.8	122	10.0	54	13.0	394	13.5
	40-44	222	17.1	173	14.3	67	16.1	462	15.8
	45-49	256	19.8	257	21.2	72	17.3	585	20.0
	50-54	153	11.8	206	17.0	51	12.3	410	14.0
	55-59	122	9.4	140	11.5	34	8.2	296	10.1
	60-64	83	6.4	108	8.9	23	5.5	214	7.3
	65-69	37	2.9	70	5.8	18	4.3	125	4.3
	70-74	25	1.9	34	2.8	12	2.9	71	2.4
	75-79	6	0.5	22	1.8	5	1.2	33	1.1
	80 and Above	7	0.5	8	0.7	1	0.2	16	0.5
Marital Status	Unmarried	102	7.9	17	1.4	46	11.1	165	5.6
	Married	1193	92.1	1197	98.6	370	88.9	2760	94.4
Residential Status	Rural	951	73.4	877	72.2	288	69.2	2116	72.3
	Urban	344	26.6	337	27.8	128	30.8	809	27.7
Education	Iliterate	380	30.4	513	43.5	144	36.5	1037	36.7
	Literate	115	9.2	154	13.1	37	9.4	306	10.8
	Qualified	656	52.5	488	41.4	180	45.6	1324	46.9
	Highly Qualified	99	7.9	24	2.0	34	8.6	157	5.6

Table 2. The Table Shows the Proportion of Cases Diagnosed at Different Stages

Stage at diagnosis	Breast (*AJCC staging) N	%	Cervix Uteri (#FIGO) N	%	Ovary (FIGO) N	%	Total N	%
Stage I	49	5.4	60	5.7		2.9	113	5.4
Stage II	378	41.7	579	55.1		0.7	958	45.7
Stage III	315	34.8	345	32.8		62.6	747	35.6
Stage IV	164	18.1	67	6.4		33.8	278	13.3

*AJCC=American Joint Committee on Cancer Classification; #FIGO=International Federation of Obstetrics and Gynecology staging system

there were 513 (43.5%) illiterate patients followed by qualified, literate and highly qualified as shown on table 1. In ovarian cancers the proportion of qualified patients was 45.6% (180/395), followed by illiterate in 36.5% (144/395), literate in 9.4%, (37/395), and highly qualified in 8.6% (34/395) patients (Table 1).

Stage at diagnosis

Out of 2925 cases, the information of stage at diagnosis in the dataset was present in 71.7% (2096 cases). Stage distribution of breast cancers; stage I in 5.4% (49/906), stage II 41.7% (378/906), stage III 34.8% (315/906) and stage IV in 18.1% (164/906) of cases.

Stage distribution of uterine cervix cancer; stage I in 5.7% (60/1051), stage II in 55.1% (579/1051), stage III in 32.8% (345/1051) and stage IV in 6.4% (67/1051) of cases. In the stage distribution for ovarian cancer, 62.6% (87/139) and 33.8% (47/139) of cases reported with stage III and stage IV disease respectively (Table 2).

Discussion

The age adjusted incidence rate (AAR) of breast, uterine cervix and ovarian cancers were; 7.2 to 30.3, 5.6 to 24.3 and 1.5 to 10.7 per one lakh populations respectively in the North East India. (National Cancer Registry Programme, 2013). The AAR of the cancers of these cancers is varied from one region to another in this region because of the heterogeneity of the socio-demographic composition of the population of North East India. So, it is necessary to understand the socio-demographic composition of patients with cancers of breast, uterine cervix and ovary from different parts of this region. In females the leading sites of gynecological cancers varies from one country to another. It has been shown that in Iran, ovarian cancer is the leading gynecological cancer (Arab et al., 2014). But, in the present study the leading gynecological cancer is the uterine cervix cancer. However, breast is the leading female cancer of our population, as shown in the present analysis. Moreover, it has been shown that the incidence of breast cancer is increasing in the Asian population (Keramatinia et al., 2014). It had also been shown that majority of female cancers occurred at the age group of 50-59 years of age (Puri et al., 2014). However, in our present analysis, most of the patients with cancers of breast, uterine cervix and ovary were seen below the age of 54 years and the median age for these cancers was in the middle age of 45-48 years. Interesting to note in the present analysis was that, almost all (~99%) the patients with uterine cervix cancers were married when compared with breast and ovarian cancers. Ovarian cancers can occur at a very young age though. It has been advocated that screening program for breast cancer should be started early (Taheri et al., 2013). Also, our analysis has shown the median age (range) for breast cancer in our population is 45 years (17-85) of age. Although, it has been shown that rural-urban disparity is present in case of uterine cervix cancers in the developed countries (Singh, 2012). However, in the present analysis the difference of occurrence of breast, uterine cervix and ovarian cancers in urban-rural settings was not significant

(p>0.05). Women with gynecological cancers especially uterine cervix cancer may report late due to stigma (Ortashi and Kalbani, 2013) and also, because of illiteracy. In our present analysis, the highest proportions (43.5%) of cases with uterine cervix patients were illiterates. And, combined qualified and highly qualified patients of breast, uterine cervix and ovarian cancers were 60.4%, 43.4% and 54.2% respectively. It also shows that, lesser proportion of patients with uterine cervix were either qualified or highly qualified. Our analysis has shown that in our population patients with breast cancers are comparatively more qualified. Moreover, it has been shown that there is an improvement in survival for patients with cervical cancers and higher educational levels (Husssain et al., 2008). As such population based intervention for improvement of educational levels can be a part of comprehensive cancer control programme in the context of survival.

Increasing awareness and early detection methods for screening of breast cancer are important in India (Frie KG et al., 2013). In our analysis it was seen that the proportion of stage I breast cancer was low (5.4%), which calls for population based intervention as advocated. International comparison amongst developed countries has shown that differences in survival due to breast and ovarian cancers can be partly explained due to differences in stage at diagnosis (Maringe et al., 2012; Walters et al., 2013). In our analysis almost 97% of patients with ovarian cancers were diagnosed at advanced stage of stage III and IV and it will thus contribute to the substantial rise in death rates due ovarian cancer in our population.

In conclusion, improving the education of females of our population is necessary for probable improvement in the early diagnoses of female cancers mainly breast and uterine cervical cancers. Any population based intervention for the detection of cancers of breast, uterine cervix and ovarian cancer to some extent should be started early in our population.

Acknowledgements

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