Role of Hospital-Based Cancer Registries: A Decade of Experience of Cancer Cervix from a Tertiary Care Centre, India

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ABSTRACT

Background: Hospital-based registries are important tools for policy formulations and region-specific data creation, particularly in case of cervical cancer, which is preventable by an effective screening program. Objective: To study the epidemiological characteristics and trends in cervical neoplasia in an urban population over a decade. Materials and Methods: Data were collected from the histopathological records of patients from January 2000 to December 2009. Results: A total of 1315 gynecological malignancies were reported with cancer cervix being the most common (70.4%) with a progressive increase in the number from 56 in 2000 to 157 in 2009. Squamous cell cancer was the predominant variant with majority in advanced stage. The mean age was 50.1 years with doubling of cases in the ≤35-year category. Of 742 colposcopic biopsies performed, cervical intraepithelial neoplasia (CIN) I was diagnosed in 34.9%, CIN 2 in 11.8%, CIN 3 in 7.8%, and microinvasive cancer in 0.8% cases. Conclusion: Though screening programs are in place, their effectiveness can be judged only by such reporting systems that aid in modifying the current cancer control strategies.

Keywords: Cancer cervix, cancer registry, cervical neoplasia, CIN, squamous cell cancer

Introduction

Cancer cervix is considered almost always preventable today. Yet, it remains the second most common cancer among women worldwide, with an estimated 555,000 new cases and 310,000 deaths in 2007.1

Current estimates from India indicate that every year 132,082 women are diagnosed with the disease and 74118 die from it.2 These figures are astounding and imply that India alone accounts for one-fourth of the total burden of disease.

Ethnic variations and environmental influences make incidence of cancer variable across different populations, hence making it mandatory to have population-based registries. In resource poor countries where population-based registries are not maintained, hospital-based registries are important tools for policy formulations and region-specific data creation, particularly in case of cervical cancer, which is preventable by an effective screening program.

The union territory of Delhi, the capital of India, is a densely populated urban metropolis with a population of 16,753,235 as per 2011 census. Guru Teg Bahadur Hospital (GTBH) is the only tertiary care hospital in east Delhi catering to 1,709,346 people. Keeping in mind the large catchment area of our hospital and the changing face of cancer cervix in India, we undertook a study in our hospital to study the epidemiological characteristics and trends in cervical neoplasia and preinvasive cancer in an urban population over the last 10 years.
Materials and Methods

This retrospective descriptive study was undertaken in the Department of Obstetrics and Gynecology at University College of Medical Sciences and GTBH, Delhi. Cancer cervix and preinvasive cancer data were collected from the histopathological records of patients attending gynecology outpatient department (OPD) or admitted to gynecology ward over the last 10 years, from January 2000 to December 2009 and analyzed.

Cervical intraepithelial neoplasia (CIN) data were collected from the histopathological records of patients who underwent colposcopic biopsy from January 2000 to December 2009. The inclusion criteria for colposcopic examination were abnormal cytology report, cervical appearance suggesting neoplastic change, visual inspection with acetic acid (VIA), or visual inspection with Lugol’s iodine (VILI)-positive cases.

Results

A total of 1315 patients with gynecological cancers were detected from January 2000 to December 2009. Of these cervical cancer was the most common malignancy reported [Figure 1]. Gynecological cancers were detected in a total of 1315 patients from January 2000 to December 2009. Of these cervical cancer was the most common malignancy reported Cervical cancer was the predominant cancer 70.4% (n = 927) followed by ovarian 16.2% (n = 214), uterine corpus 9.8% (n = 129), vulva 2.6% (n = 35), vagina 0.6% (n = 9), and fallopian tube 0.8% (n = 1).

Cancer cervix patient characteristics are presented in Table 1. The mean age of patients with cervical cancer was 50.1 years, and it was similar for both squamous cell carcinoma (50 years) and adenocarcinoma (51.2 years). Majority of patients belonged to low socioeconomic strata. The proportion of cases in ≤35-years age group showed a 50% increase from 5.8% (n = 14) (2000-2004) to 12.2% (n = 84) (2005-2009), whereas the number of cases detected in the older age group remained almost constant over 10 years. The proportion of cases presenting in stage I and II remained constant at almost 30%. About 40% of the patients presented in stage III in 2000-2005, which declined to 33% in the subsequent five years. Ninety percent of patients were symptomatic at the time of diagnosis and the most common presenting symptom was postmenopausal bleeding (40%). Squamous cell cancer was the most common histopathological type 92.5% (n = 858), with large cell nonkeratinizing 59.2% (n = 508) being the most common sub variant followed by large cell keratinizing 36.3% (n = 312), papillary 2.8% (n = 24), small cell 1.6% (n = 14), and verrucous 0.1% (n = 1). Adenocarcinoma constituted 5.9% (n = 55) followed by adenosquamous (0.7%), malignant melanoma (0.2%), carcinoid (0.2%), and sarcoma (0.2%). There was no change in the mean age, stage at presentation, or predominant histopathological variant of cervical cancer over the past decade.

The year-wise distribution of cancer cervix cases is depicted in Figure 2. Apart from a marginal fall in the number of reported cases of invasive carcinoma cervix seen in the year 2002, the trend has been toward a progressive increase over the past 10 years. Though squamous cell carcinoma has followed the increasing trend of the total number of cases, adenocarcinoma has remained constant over these years.

A total of 1242 patients underwent colposcopic examination of the cervix from January 2000 - December 2009. Among these 743 colposcopic biopsies were performed. Table 2 shows the histopathological analysis of colposcopic biopsies and the mean age of patients with CIN. The mean age at diagnosis for CIN 1, CIN 2, and CIN 3 was 24.2, 28.2, and 34.6 years. Among the abnormal histopathological reports, CIN 1 was the commonest (34.9%) followed by CIN 2 (11.8%).

Figure 1: Gynecological cancers (2000-2009)

Figure 2: Cancer cervix cases: Year-wise data
Invasive cancer of the cervix is largely considered a preventable disease because it has a preinvasive state; cervical cytology programs are currently available and the treatment of preinvasive lesions is effective. Despite this, our study revealed that cancer cervix is still the predominant gynecological malignancy among women presenting to our hospital. This pattern follows known trends in our country.\(^{(3)}\)

When we analyzed the number of cancer cervix cases reported yearly [Figure 1], we found that over the past 10 years, while the gynecology OPD attendance had shown a 1.5-fold increase, from 32,056 patients attending the OPD in the year 2000 to 48,028 in the year 2009, the number of cases of cancer cervix had shown a disproportionate 3-fold increase, from 51 cases being diagnosed in the year 2000 to 157 in 2009. These findings are in contrast to various reports showing a decline in cancer cervix cases in most urban areas.\(^{(4-7)}\) However, despite the study being conducted in an urban metropolis, we get a lot of rural migrant women from neighboring states and belonging to the lower socioeconomic strata. Our findings are consistent with those of rural areas in our country, which still report cancer cervix rates to be extremely high.\(^{(8,9)}\) This could also be because of greater awareness and easier access to health care facilities.

Another interesting feature that emerged from our study was that while the western literature reports adenocarcinoma to occur commonly in younger women vis-à-vis squamous cell cancer, the mean age at diagnosis of both adenocarcinoma and squamous cell cancer was similar in our study, i.e. 51.2 and 50 years, respectively.\(^{(10)}\)

The mean age at presentation of squamous cell cancer remained almost the same over the past 10 years, i.e. 51.1 years from 2000-2004 to 49.8 years from 2005-2009. Further analysis of age at presentation revealed that the proportion of younger women with cervical cancer, i.e. ≤35 years had doubled from 5.8% cases in 2000-2004 to 12.2% from 2005-2009. We do not yet know whether this represents an actual trend with a possible decline in age of patients with cancer cervix in the future or it is simply fallacious due to small number of patients in that category.

Majority of patients presented to us in advanced stage of the disease with only one-third of them presenting to us in stage I. This trend remained the same over the past decade. Nearly 70% of patients presented with stage III disease or higher at diagnosis in our study as in other studies from India.\(^{(5)}\)

Histopathological analysis of cervical cancer cases showed squamous cell cancer to be the predominant cancer, with adenocarcinoma accounting for a mere 5.9% of cases. This is again in contrast to western literature where adenocarcinoma appears to be on the rise with newer reports showing a proportion as high as 18.5-27% of cases.\(^{(11-15)}\) The reason for this discrepancy may be because in countries where effective screening programs are in place, invasive squamous cell cancer is decreasing as its preinvasive lesions are easily detected and treated, whereas adenocarcinoma, being endocervical, is less amenable to screening and hence

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**Table 1: Cancer cervix patient characteristics**

|                          | Mean age (years, range) |
|--------------------------|-------------------------|
| Squamous cell cancer     | 50.0                    |
| Adenocarcinoma           | 51.2                    |
| Cancer cervix (all variants) | 50.1 (14-85)          |
|                          | 2000-2004               |
|                          | 51.1                    |
| Age category             | Proportion of cases (%) |
| ≤35                      | 5.8                     |
| 36-50                    | 42.9                    |
| >50                      | 51.3                    |
| Stage at presentation    |                        |
| Stage I                  | 31.6                    |
| Stage II                 | 27.5                    |
| Stage III                | 39.5                    |
| Stage IV                 | 1.2                     |
| Presenting symptom (%)   |                        |
| Postmenopausal bleeding  | 40                      |
| Vaginal discharge        | 36                      |
| Postcoital bleeding      | 10                      |
| Intermenstual bleeding   | 9                       |
| Menorrhagia              | 2                       |

**Table 2: Colposcopic biopsy data**

|                          | Mean age (years, range) |
|--------------------------|-------------------------|
| CIN 1                    | 24.2 (16-35)            |
| CIN 2                    | 28.2 (17-40)            |
| CIN 3                    | 34.6 (22-42)            |
| Histopathological diagnosis | Number of cases (%)     |
| Normal                   | 330 (44.4)              |
| CIN 1                    | 260 (34.9)              |
| CIN 2                    | 88 (11.8)               |
| CIN 3                    | 58 (7.8)                |
| Microinvasive cancer     | 6 (0.8)                 |

**Discussion**

Invasive cancer of the cervix is largely considered a preventable disease because it has a preinvasive state; cervical cytology programs are currently available and the treatment of preinvasive lesions is effective. Despite this, our study revealed that cancer cervix is still the predominant gynecological malignancy among women presenting to our hospital. This pattern follows known trends in our country.\(^{(3)}\)
appears to be on the rise. On the other hand, those countries that have not been able to implement effective cervical cancer screening programs would still report a higher percentage of squamous cell cancer cases, which is the trend we are seeing in our country today and is also reflected in our study.

During the same period, 742 colposcopy-directed biopsies were performed and 412 cases of preinvasive cancer were detected and treated; CIN 1 \((n = 260)\), CIN 2 \((n = 88)\), CIN 3 \((n = 58)\), and microinvasive cancer \((n = 6)\) using Pap smear and simple screening tests such as VIA/VILI, which have become routine in our gynecologic clinics. The mean age at diagnosis for CIN 1, CIN 2, and CIN 3 were 24.2, 28.2, and 34.6 years, respectively. The mean age of patients with invasive cervical cancer was 50.1 years. These data were encouraging, as it shows that there is a wide window of opportunity for the treatment of preinvasive lesions, even with regard to CIN 3 lesions.

**Conclusion**

Our study demonstrates that cancer cervix is still the predominant gynecological malignancy among patients presenting to our hospital, and this is in accordance with known trends in our country. This, together with the high proportion of squamous cell variant of cancer cervix cases, demonstrates that screening programs need a much wider coverage and effective implementation in our country. It also highlights the fact that though screening programs are in place, the effectiveness of these can be judged only by such reporting systems that will aid in modifying the current cancer control strategies. Hence, we suggest the urgent need for mandatory hospital-based registries.

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