

Research Article

Profiles of gall bladder cancer reported in the hospital cancer registry of a Regional Cancer Center in the North-East India

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ABSTRACT

Background: The incidence of gall bladder cancer (GBC) is very high in this part of the world and there is little information on the descriptive epidemiology of GBC from our population.

Methods: A retrospective study on the data set of hospital cancer registry was analyzed. The data set consisted of patient information registered during the period of January 2011 to December 2012. The cases included for the present study were histologically confirmed and radiologically diagnosed cases of GBC. All the cases were retrospectively analyzed for gender, age, urban-rural residences, religion of patients and their educational levels. Descriptive statistics was calculated and Chi square test was done to see the significance differences among categories.

Results: A total of 837 cases of GBC were registered, F:M was 2.33, median age in females and males was 54 and 50 years respectively, majority of cases in both the genders were seen in 50-59 years of age, 81.1% patients were from rural areas and 18.8% from urban areas, Chi square on comparison with other cancers showed $p < 0.05$, and there was no major religious and educational pattern of GBC seen in our population.

Conclusion: In our population females are at high risk especially past 40 years of age and rural population with its varied environmental, lifestyles and infective agents should be investigated for possible risk factor in the causation of GBC.

Keywords: Gall bladder cancer, Epidemiology, North-East India, Socio-demographic factors

INTRODUCTION

Gall bladder cancer (GBC) is a common malignancy amongst both males and females in the population of North-Eastern India. The age adjusted incidence rates (AAR) of GBC varies from 3.2 to 7.2 per one lakh population in males and 10.1 to 14.0 per one lakh population in females.¹ The incidence of GBC in females is remarkably high in the state of Assam. This part of the world is considered as high risk area for GBC,² which could be attributed to various risk factors including

hitherto unknown environmental risk factors.³ The incidence of GBC is proportionate to the prevalence of gall stone disease in the population.^{4,6} A recent study by Sharma *et al*, has shown the incidence of incidental GBC in post-operative specimens of our population to be around 2.7%.⁷ The presence of gall stones increases the risk of GBC by 4 to 7 times.^{8,9} The socio-demographic composition of our population is heterogeneous with different patterns of cancer seen in different ethnic groups.¹⁰ The incidences of GBC is on a rising trend in the different registries of North-East India.¹ Moreover,

GBC is a fatal cancer with high morbidity and mortality. As such, it becomes imperative to identify the risk factors prevalent in our population for any meaningful cancer control measures for GBC. To identify life style and environmental risk factors, case-control analytic studies are required. Authors in the present study have tried to shed light on the descriptive epidemiology of GBCs in our population.

METHODS

This was a retrospective study carried out from the data available at cancer registry of a regional cancer center in the North-East India. The data set consisted of patient information on GBCs registered during the period of January 2011 to December 2012. No patient identifying information was shared with anyone. The cases of GBC were identified by International Statistical Classification for Diseases, 10th revision (ICD-10) code C23. The cases included for the present study were histologically confirmed and radiologically diagnosed cases of GBC. All the cases were retrospectively analyzed for gender, age, urban-rural residences, religion of patients and their educational levels, and the stage at diagnosis. The residential status of urban-rural area was recorded by registry staff according to the information provided by patients or patient’s representatives at the time of registration. The data set consisted of information on educational levels which was classified and coded according to the National Cancer Registry Programme of India under Indian Council of Medical Research. Broadly the classifications according to NCRP are; not applicable (for children below 5 years), illiterates (patients who are unable to read or write), literates (patients who are able to read and write their names), school or high school levels (primary, middle, secondary and technical education), technical education, and college and above. We had further clustered the different educational levels into three groups for the present analysis; Illiterates (unable to read or write), literates (able to write or read their names and primary school education), and qualified (high school/technical level education and college and above). The results of the present study are presented as percentages up-to single decimal place. Descriptive statistics was calculated and Chi square test was done to see the significance differences among categories.

RESULTS

A total of 837 cases with GBC were identified from the data base of cancer registry. Out of all the cases registered, 74.4% (623/837) were diagnosed microscopically and 25.5% (214/837) were diagnosed radiologically. Of 837 patients, 70.0% (586/837) were females and 29.9% (251/837) of patients were males. Female to male ratio (F:M) was 2.33. The age of patients ranged from 24 years to 84 years. Overall median age was 50 years. The median age in females was 50 (24-80) and in males it was 54 (24-84) years. The age group distribution is shown on Figure 1.

Majority of patients in both females and males were seen in the age group of 50-59 years of age, 32.0% and 31.4% respectively. Chi square test for the difference of age group and gender showed Chi square=15.77, degree of freedom was 6, P=0.015.

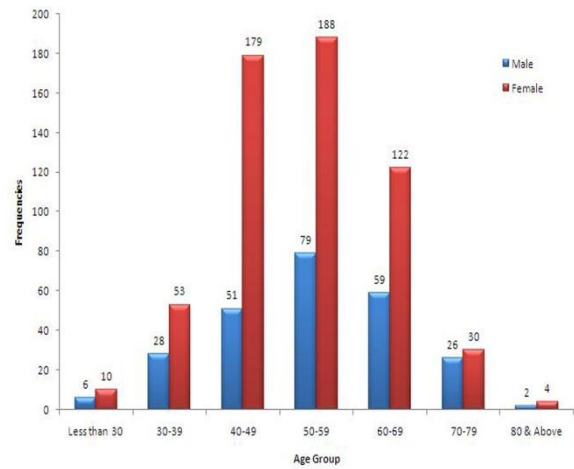


Figure 1: It shows the age-group distribution of patients with gall bladder cancer in males and females.

There residential location of patients was, 81.1% (679/837) patients were from rural areas and 18.8% (158/837) patients were from urban areas. The significance of difference between urban and rural pattern was tested by Chi square test (Table 1). On comparing with other cancers, the Chi-square statistic was 15.3162. The P value was 9.1E-05 (p < 0.05).

Table 1: It shows the pattern of occurrence of gall bladder cancers in urban-rural settings in comparison with urban-rural differences of cancer in our registry.

Cancer site	Rural	Urban
Gall bladder cancer	679	158
Others	9368	3104

In our analysis, 65.1% (545/837) were Hindus, 33.6% (282/837) were Muslims, and only 1.5% (13/837) patients were Christians. The educational levels of patients with GBC were as follows; 45.5% (381/837) patients were illiterates, 24.3% (204/837) patients were literates and 30.4% (255/837) patients were qualified.

Information on stage at diagnosis was present in 91.2% (764) patients. Stage I was seen in 0.2% (2/764), stage II in 2.4% (19/764), stage III in 25.2% (193/764) and stage IV was seen in 71.9% (550/764) of patients.

DISCUSSION

The AAR of GBC is not only high in this part of the country but, it also stands out as a leading site for cancer

amongst females surpassing common female cancers like ovarian cancers.¹ Females are at a higher risk for the development of GBC compared to males. In our present analysis females were more than twice affected. GBC in females is more often seen in the reproductive age groups. However, in the Indian context, menopausal women had a significant risk of GBC than the menstruating women.¹¹ In the present analysis, 83.4% of GBC in females were seen in the range of 40-69 years of age. Also, the difference in the occurrence of GBC in males and females according to their age group was statistically significant ($p < 0.05$). This finding needs to be further investigated. In the present analysis, majority of patients were from rural areas. On comparing with cancers of other sites, GBC showed a statistically significant association with rural residential status. Studies have shown that people residing in the Gangetic belt are at increased risk of GBC in addition to risk factors such as fried foods, tobacco use, a long interval between the meals, chemical exposure, and family history of gallstone disease.¹² Our study has highlighted that, source of potable water, role of pesticides in rural areas and also, high parity amongst rural women as potential risk factors,^{13,14} which needs to be confirmed by case-control study design in our population. There is a high prevalence of *Salmonella Typhi* infection in certain regions of Assam more so in rural areas.¹⁵ This assumes relevance in the context of the present study, as it showed a significant association of GBC with rural residences.

In the present study, majority of patients were Hindus (65.1%), which was similar with all the cancer cases registered at our institute, however, there was a slight increase in the number of cases amongst the Muslims (33.6%).¹⁶ The educational levels of patients in this study was unequivocal in comparison to overall educational levels of cancer patients reporting to our institute.¹⁶

One of the major concerns with GBC is the asymptomatic nature of the disease in its early stages. As such most of the patients presents with a fairly advanced disease of stage III and stage IV. In this analysis 97% of patients presented in an advanced stage of the disease. So, urgent ultra-sonography followed by cytological investigations has been advocated to diagnose the gall bladder disease in gastrointestinal problems as symptoms like abdominal pain, abdominal lump, anorexia, jaundice, nausea and vomiting.¹⁷

CONCLUSION

In our population females are at high risk especially past 40 years of age and rural population with its varied environmental, lifestyle and infective agents should be investigated for possible risk factor in the causation of GBC.

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Conflict of Interest: None declared

Ethical permissions: This study was approved by the institutional review board.

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