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Burden of Gallbladder Cancer Diagnosed Between 2012 and 2018 at B. P. Koirala Memorial Cancer Hospital, Nepal

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Abstract

Gallbladder cancer (GBC) is an uncommon disease with one of the highest incidences in India, south Pakistan and Chile. The incidence in Nepal is also high given the proximity to India. This study aims to highlight the burden of gall bladder cancer and shed some light on its risk factors. The incidence in females is high. Lower socioeconomic status, illiteracy, high prevalence of obesity, smoking, high prevalence of *H. pylori* could be the driving factors in gall bladder cancer in Nepal.

Keywords: Burden, Gallbladder, Cancer, Diagnosed

Introduction

Worldwide, there were 115,949 new cases of gallbladder cancer, causing 84,695 deaths, in 2020 [1]. Based on the Human Development Index (HDI) 2020, the highest number of gallbladder cancer cases was seen in high HDI countries (43,476), followed by very high HDI (35,332), medium HDI (35,100) and low HDI (2,024) [1].

The number of new cases is projected to increase globally from 2020 to 2040, with a disproportionate increase in the burden in developing countries. The number of new cases of gallbladder cancer is projected to increase to 195,338 by 2040 in worldwide. In low human development index (HDI) countries the number of new cases will increase by (104.8%), for medium HDI countries by 72.1% as compared to only 42.3% increase in very high HDI countries [1].

From 2020 to 2040 there is a projected increase in the number of deaths attributable to gallbladder cancer, with a huge difference between the very high HDI and low HDI countries. In low HDI countries this is expected to increase the gallbladder cancer deaths from 2020 to 2040 by 105.2%, in medium HDI countries by 72.3% and in very high HDI countries by 46.1% [1].

Nepal is a low and middle-income country (LMIC) situated between India and China. Based on the data of Globocan 2020, estimated number of new cancer cases in males were 8,943 [1]. Lung cancer was the first common cancer (18%) in males followed by stomach (10.9%), colorectum (6.9%), and lip, oral cavity (6.8%). Estimated number of new cases in females (11, 565) was higher compared with males. Cervix uteri was the first common cancer (19.4%) in females followed by breast (17.1%), lung (7.7%) and gallbladder (6.1%) [1].

Methods

This is a retrospective hospital-based study. Patients diagnosed with gallbladder cancer at B P Koirala Memorial Cancer Hospital (BPKMCH) between 1st January 2012 and 31 December 2018 were included in the study. All cases diagnosed by a histopathology's and treated for cancer with name, age, sex, were abstracted from medical record section of BPKMCH. All participants were collected for analysis and double/multiple entry cancer cases were excluded by cross checking name, age, sex, address and hospital registered number of each patient and all cases coded as per ICD-O, 3rd edition (Fritz and Percy, 2000). Data were entered and analysed using SPSS 26 (SPSS Inc. Chicago, USA) and relative frequency were obtained.

Ethical consideration

The author has obtained ethical approval from B. P. Koirala Memorial Cancer Hospital (BPKMCH).

Results

Table 1: Demographic data, and signs and symptoms of gallbladder gastric cancer patients diagnosed after post-cholecystectomy between 1st January 2012 and 31st December 2018 at BPKMCH, Nepal

Variable	Characteristics	Frequency	Percent (%)
Sex	Male	357	31.5
	Female	775	68.5
Total		1132	100.0
Sign and Symptoms		Yes (%)	No (%)
	Vomiting	373 (33.0)	759 (67.0)
	Anorexia	1018 (90.0)	114 (10.0)
	Weight loss	905 (80.0)	227 (20.0)
	Jaundice	452 (40.0)	680 (60.0)
	Nausea	452 (40.0)	680 (60.0)
	Itchy skin	452 (40.0)	680 (60.0)
	Biliary colic/pain abdomen	396 (35)	736 (65)
	Dyspepsia	113 (10)	1019 (90)

Table 2: Frequency of newly diagnosed gallbladder cancer cases between 2012 and 2018 at BPKMCH

Years	Frequency	Percent
2012	26	2.3
2013	135	11.9
2014	177	15.6
2015	196	17.3
2016	233	20.6
2017	231	20.4
2018	134	11.8
Total	1132	100.0

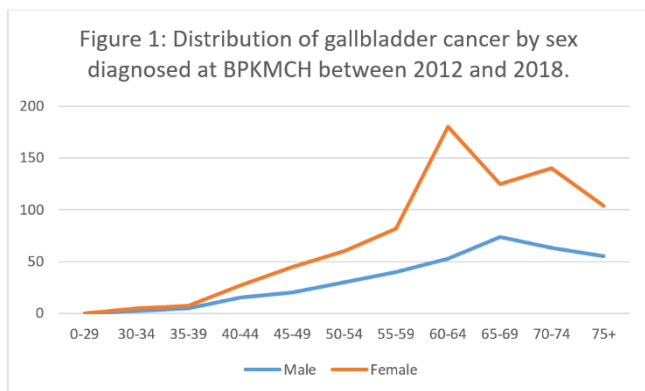


Fig 1: Distribution of gallbladder cancer by sex diagnosed at BPKMCH between 2012 and 2018.

Between 1st January 2012 and 31st December 2018, 1,132 newly diagnosed gallbladder cancer cases were recorded at BPKMCH. Anorexia (90%) was the most common sign and symptom followed by weight loss (80%). 40% of patients had jaundice, nausea and itchy skin. The number of females cases were more than double compared to male cases (see Table 1). The mean age at diagnosis for males were higher 56.9 years compared to females 53.14. The highest number of cases (233) were diagnosed in 2016 where as the lowest number (26) were diagnosed in 2012. Gallbladder cancer

increased by age in both sex however, the trend decreases at old age group in both sexes (see Figure 1).

Discussion

The result of this study is in line with the other earlier report conducted in India which is a culturally similar country to Nepal [2]. The increasing trend for gallbladder cancer in Nepal could be lower socio-economic status of Nepalese people. One study reported that lower socio-economic status has associated with the elevated risk for gallbladder cancer in Chile and India [3]. Low socio-economic status (SES) is related with lower literacy rate, overcrowding, poor access to health care and clean drinking water than those belong to upper socioeconomic status. Though study reported that lower literacy is linked with higher relative risk for gallbladder cancer RR: 1.49, 95% CI: 1.3 to 1.60 [4], there is not any study that shows the association between SES and gallbladder cancer in Nepal. Hence further studies are essential to determine the accurate association in Nepalese people.

Another reason for increasing trend of gallbladder cancer among Nepalese people may be the higher prevalence of helicobacter pylori (*H. pylori*) in Nepalese people. Studies conducted in Nepal have found that the prevalence of *H. pylori* infection has varied. Adhikari, Regmi [5] reported 24.6 per cent overall prevalence of *H. pylori* infection (data collected between January 2015 to June 2017); Shrestha, Ghosh [6] 29.4 per cent prevalence (data collected between May 2010 to April 2013); Ramesh, MD [7] 33.9 per cent prevalence (data collected between January 2004 to August 2005). Furthermore, a higher *H. pylori* prevalence (61.3 per cent; p = 0.01) was found in the mountainous regions of Nepal than in Kathmandu (43.8 per cent) in 2013 [8]. Dutta, Bush [2] reported significantly higher prevalence of *H. pylori* among gallbladder cancer patients compared with controls (59% vs 20%).

Another reason for increasing trend of gallbladder cancer in Nepal may be the higher prevalence of smoker in Nepal. Evidence suggested that smoking is associated with increased risk of gallbladder cancer. Indian study reported that the RR: 11, 95% CI: 1.7-7.1 for those who smoked more than 10 cigarettes each day for minimum years compared to non-smokers [9]. In addition, another Indian study found that chewing tobacco was associated with increased risk for gallbladder cancer [10].

Higher burden of gallbladder cancer in females compared to males could be the reason of obesity. Studies have reported higher body mass index (BMI) in Nepalese women compared to men. Obesity, BMI of >30, is associated with two times increased risk for gallbladder cancer. The relative risk is 1.88; 95% CI: 1.66 to 2.13 [2]. One study reported that obesity is associated with increased risk for gallbladder cancer and the adjusted RR was 2.1 (95% CI: 1.2 to 3.8) between the highest quartile and the lowest quartile for BMI [11].

However, there is no studies in Nepal that shows the association between family history of gallbladder cancer or gallstone disease and gallbladder cancer. Evidence suggested that family history of gallbladder cancer or gallstone disease in first degree relatives has been associated with increased risk of gallbladder cancer by 5 times (RR: 4.8, 95% CI: 2.6 to 8.9) [3]. Matsukura, Yokomuro [12] have shown that family history of gallstones is associated 5.3 times increased risk for gallbladder cancer (95% CI: 1.5 to

18.9). In addition another study also reported family history of biliary disease is associated with increased risk for gallbladder cancer (OR: 3.48, 95% CI 1.38 to 8.98) [13].

Conclusion

Based on the evidence and the finding of our result it is clear that the burden of gallbladder cancer is higher in females compared to males. However, it is essential to study the potential risk factors of gallbladder cancer in Nepalese context.

Conflicts of interest

No funding was provided to support this research. The authors declare they have no competing interests.

Authors' contributions

Ganga Sapkota contributed to design and drafted the initial manuscript. Bhawana Wagle, Sumi Dhakal, Sapana Bhandari, Suman Khanal, Zhibi Hauna, Deborah Sims and Krishna Kanta Poudel revised the manuscript. The final revision was done by Ganga Sapkota, Deborah Sims and Krishna Kanta Poudel.

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