

## RESEARCH ARTICLE

# Unique Features of Gastric Cancer in Young Patients: Experience from a General Hospital in Nepal

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### Abstract

**Background:** Gastric cancer, the fifth most common malignancy in the world, usually affects older individuals but can occur in younger age groups. In this study we compared the clinicopathological profile of young patients of gastric cancer with that of older patients. **Materials and Methods:** It is a prospective study of gastric cancer patients treated over three year period (January 2012 to December 2014). Data of patients were obtained from the medical record. Clinical and pathological characters of younger patients (age 40 years or less) were compared with older patients (age more than 40 years). **Results:** There were total of 152 patients treated during the study period. Twenty patients (13.2%) were less than 40 years of age and 132 (86.8%) were older. The male to female ratio in younger patients was 1:1.5 whereas in older patients it was 1:0.6. In the younger age group 14 patients (70%) had poorly differentiated adenocarcinoma in contrast to 45% in the older age group ( $p < 0.01$ ). Some 55% of younger and 42% of older patients had stage IV disease at presentation and curative surgery was not possible. Palliative surgery for gastric outlet obstruction or bleeding from the tumor was performed on 25% and 21% respectively. **Conclusions:** Gastric cancer in young people aged less than 40 years has unique characters like female predominance, unfavorable tumor biology, and advanced stage at presentation. There should be a high index of suspicion of gastric cancer even in young patients.

**Keywords:** Gastric cancer - gastrectomy - stomach - young patients - Nepal

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### Introduction

Gastric cancer is fifth most common cancer and third most common cause of cancer related death worldwide (Ferlay et al., 2013). In Nepal it is the most common gastrointestinal cancer and a fourth most common cause of cancer related death (Pradhananga et al., 2009).

The most important factor for the prognosis is the stage of cancer at diagnosis. Majority of patients are diagnosed at advanced stage and their survival is very low. There are no specific symptoms for this cancer and early symptoms are often treated as acid peptic disease. Such problem of overlooking the early symptoms is more common if this cancer occur in young patients. Although gastric cancer usually affects older individuals it has been increasingly reported in young patients. This cancer in young patients has some unique characteristics compared with that in elderly patients. Besides having high frequency of advanced lesions at presentation, young patients often have undifferentiated tumors (Lai et al., 2008). Gastric cancer in young patients has been reported to spread more rapidly and be biologically more aggressive (Saito et al., 2012). In this study we compared the clinicopathological profile of young patients of gastric cancer with that of older patients

### Materials and Methods

It is a prospective observational study of gastric cancer patients treated in a tertiary care general hospital in Nepal from January 2012 to December 2014. Permission for the study was taken from institutional review board. All the patients who underwent surgical treatment or who visited outpatient department only were included in the study. Data of patients were obtained from the medical record and from the patients and their relatives. Information including patients' age, sex, tumor classification, stage of disease, type of surgery was retrieved. Tumor staging in each patient was based on clinical information, preoperative radiological investigations (Computed Tomography of abdomen), operative findings and pathological examination. Tumor staging was done according to guidelines of American Joint Committee on Cancer (Edge et al., 2010).

Patients were divided in two groups based on their age. Patients of 40 years or less age were grouped as younger group and patients of age more than 40 years were grouped as older patients. Clinical and pathological characters of patients of young age group were compared that of old age group patients. Clinicopathologic data were compared using the  $\chi^2$  and Fisher's exact tests.  $P < 0.05$  was

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considered statistically significant.

## Results

There were total of 152 patients treated during the study period. The mean age was  $57.1 \pm 12.5$  years with age range of 22 to 87 years. Ninety two (61.5%) patients were male and 60 (36.5%) were female. The most common presenting complains were dyspepsia (63.6%), gastric outlet obstruction (39.3%) and pain abdomen (32.8%). Sixty nine (45.3%) patients presented at stage IV diseases where curative surgery was not possible.

Twenty patients (13.2%) were of age 40 years or less and 132 patients (86.8%) were of age more than 40 years. In young age group there was significantly higher proportion of female patients. Male to female ratio in younger patients was 1:1.5 where as the ratio in older patients was 1:0.6 ( $p=0.03$ ). Fifty five percentages of young patients had stage IV disease at presentation. In older patients 42% had stage IV disease at presentation.

**Table 1. Patients and Tumour Details**

Parameters	≤ 40 years	>40 years	P value
Total number	20(13.2%)	132(76.8%)	
Gender:			
Male	8(40%)	84(63.6%)	0.03
Female	12(60%)	48(36.4%)	
Male: Female ratio	01:01.5	01:00.6	
Histological grade			
Well differentiated	0(0%)	26(19.6%)	0.01
Moderately differentiated	6(30%)	41(31.1%)	
Poorly differentiated	14(70%)	65(49.2%)	
Location of Tumor			
Antrum	12(60%)	95(71.9%)	0.23
Body	3(15%)	12(9.1%)	
Fundus	1(5%)	17(12.8%)	
Diffuse	4(20%)	8(6.1%)	
Tumor Stage			
I	0(0%)	4(3%)	0.06
II	3(15%)	27(20.5%)	
III	6(25%)	42(31.8%)	
IV	11(55%)	59(44.7%)	
Surgery			
Curative surgery	8(40%)	67(50.7%)	0.14
Palliative surgery	7(36%)	23(17.5%)	
None	5(25%)	42(31.8%)	

Palliative surgery for gastric outlet obstruction or bleeding from the tumor was done on 25% of younger patients and 21% of older patients. In younger age group 14 patients (70%) had poorly differentiated adenocarcinoma which was 49% in older age group ( $p<0.01$ ) (Table1)

## Discussion

The incidence of gastric cancer is decreasing worldwide but its prognosis is still poor making it third most common cause of cancer related death (Ferlay et al., 2013). Nepal lies in relatively low incidence area but we do not have national data on incidence of gastric cancer. In a report from Kaski district of Nepal, the age-standardized (world) incidence of gastric cancer was 3.3 per 100,000 during the year 2010-2013 (Shrestha et al., 2013).

Gastric cancer is considered as disease of elderly with peak incidence occurring at 60 to 70 years age (Nagini et al., 2012). In a previous study from our institute mean age of patients treated between 2009 to 2013 was 59.6 years (Sah et al., 2015) but in present study mean age was 57.1 years. In recent years, gastric cancer is frequently reported in young patients (Lai et al., 2008; Dhobi et al., 2013.). The incidence of gastric cancer in young patients varies from 7 % to 13 % of total patients (Santoro et al., 2007; Lai et al., 2008). Some authors have defined young age as less than 35 or 45 years however most of the authors have used 40 years as cut off age to define "young age" for gastric cancer (Lai et al., 2008; Smith et al., 2009; Saito et al., 2012). Age of 40 years or less was considered as young as in our study. The incidence of gastric cancer in young age group in our study was comparable to other studies. The increases in the incidence of gastric cancer recent few decades may be due to increased availability of health care service and health consciousness among general public which leads to increased detection of disease.

Overall, gastric cancer was more common in male, but in young group females were more common. Male to female ratio was 1: 1.5 among young patients and 1: 0.6 in older patients. Comparable findings with higher proportion of female in young group are reported by other authors in similar studies (Tso et al., 1987; Matley et al., 1988; Dhobi et al., 2013). The cause of higher proportion of women in young age group is not known.

Poorly differentiated carcinoma was more common in young patients in our series which is similar to series from by many other authors (Medina et al., 2004; Smith et al., 2009; Saito et al., 2012). Poorly differentiated tumor has poorer prognosis (Moghimi-Dehkordi et al., 2008) Majority of patients were diagnosed at advanced stage. Fifty-five percentages of young patients had stage IV diseases at presentation which was 45% in older patients. Stage and grade of the tumor are the most important prognostic factors in gastric cancer. Both of which were unfavorable in our young patients. Liberal use of esophagogastrosopy is the only way to detect gastric cancer in early stage. There are limited health care resources in our setup and patients with early symptoms are often overlooked by physicians and treated as acid peptic disease. This practice might be important cause for finding advanced cancer especially in young patients.

In a study of gastric cancer from Nepal, only 4.4% were early gastric cancer (Ghimire et al., 2014). In a study from high prevalence area in Korea, interval of screening endoscopy of more than 3 years was associated with diagnosis of gastric cancer at advanced stage (Nam et al., 2012). There is no screening program in our setup, but esophagogastrosopy should not be delayed in patient of any age with upper gastrointestinal symptoms.

Curative resection was possible only in 40% of the young and in 50% of old patients. Low curative resection rate of 17-50 percentage in young patients were reported in similar studies from India and North America (Smith et al., 2009; Dhobi et al., 2013). In countries with screening program for gastric cancer it is detected in earlier stage and high proportion of patients can undergo curative surgery (Hamashima et al., 2008). Studies from Japan has reported resection rate of more than 80 percent in both young and old age group (Katai et al., 1996; Saito et al., 2012). Majority of our patients had distal tumor in both young and old age group. The location of tumor was similar to studies from Japan and Iran but more proximal location are reported from Europe and America (Crew et al., 2006; Eskandar et al., 2006; Santoro et al., 2007).

In conclusion, Gastric cancer is usually considered as a disease of elderly population but it can occur in younger patients also. This cancer in young has unique characters like female predominance, unfavorable tumor biology, advanced stage at presentation. There should be high index of suspicion of gastric cancer even in young patients so it can be detected in earlier stage and curative treatment can be performed.

## References

- Crew K D, Neugut A I ( 2006). Epidemiology of gastric cancer. *World J Gastroenterol*, **12**, 354-62.
- Dhobi M A, Wani K A, Parray F Q, et al (2013). Gastric cancer in young patients. *Int J Surg Oncol*, **2013**, 981654.
- Edge S B, Compton C C (2010). The american joint committee on cancer: the 7<sup>th</sup> edition of the AJCC cancer staging manual and the future of TNM. *Ann Surg Oncol*, **17**, 1471-4.
- Eskandar H, Hossein M, Rahim M, et al (2006). Clinical profile of gastric cancer in Khuzestan, southwest of Iran. *World J Gastroenterol*, **14**, 4832-5.
- Ferlay J, Soerjomataram I, Ervik M, et al (2013). GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC Cancer Base No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013.
- Ghimire B, Singh Y P, Timalisina S (2014). Post operative diagnosis of early gastric cancer in a low risk population and the possibility of risk stratified screening. *Kathmandu Univ Med J*, **45**, 32-7.
- Hamashima C, Shibuya D, Yamazaki H, et al (2008). The Japanese guidelines for gastric cancer screening. *Jpn J Clin Oncol*, **38**, 259-67.
- Katai H, Sasako M, Sano T, et al (1996). Gastric carcinoma in young adults. *Jpn J Clin Oncol*, **26**, 139-43.
- Lai J F, Kim S, Li C, et al (2008). Clinicopathologic characteristics and prognosis for young gastric adenocarcinoma patients after curative resection. *Ann Surg Oncol*, **15**, 1464-9.
- Matley P J , Dent D M, Madden M V, et al (1988). Gastric carcinoma in young adults. *Annals of Surgery*, **208**, 593-6.
- Medina A R, Salgado-Nesme N, Torres- Villalobos G, et al (2004). Clinicopathologic characteristics of gastric cancer in

- a young patient population. *J Gastrointestinal Surg*, **8**, 240-4.
- Moghimi-Dehkordi B, Safaee A, Pourhoseingholi M A, et al (2008). Statistical comparison of survival models for analysis of cancer data. *Asian Pac J Cancer Prev*, **9**, 417-20.
- Nagini S (2012). Carcinoma of the stomach: A review of epidemiology, pathogenesis, molecular genetics and chemoprevention. *World J Gastrointestinal Oncol*, **4**, 156-69.
- Nam J.H, Choi, J, Cho S, et al (2012) Association of the Interval between Endoscopies with Gastric Cancer Stage at Diagnosis in a Region of High Prevalence. *Cancer*, **118**, 4953-60.
- Pradhananga K K, Baral M, Shrestha B M (2009). Multi-institution hospital-based cancer incidence data for Nepal - An initial report. *Asian Pac J Cancer Prev*, **10**, 259-62.
- Sah J K, Singh Y P, Ghimire B (2015). Presentation and outcomes of gastric cancer at a university teaching hospital in Nepal. *Asian Pac J Cancer Prev*, **16**, 5385-8
- Saito H, Takaya S, Fukumoto Y, et al (2012). Clinicopathologic characteristics and prognosis of gastric cancer in young patients. *Yonago Acta Med*, **55**, 57-61.
- Santoro R , Carboni F, Lepiane P, et al (2007). Clinicopathological features and prognosis of gastric cancer in young European adults. *British J Surg*, **94**, 737-42.
- Shrestha UK, Ghos A, Alurkar VM, et al (2013). Prevalence of Helicobacter pylori infection, its correlation with gastroduodenal diseases and the incidence of gastric cancer in Nepal. *J Advances Internal Med*, **2**, 52-60.
- Smith BR, Stabile BE (2009). Extreme aggressiveness and lethality of gastric adenocarcinoma in the very young. *Arch Surg*, **144**, 506-10.
- Tso P L, Bringaze W L, Dauterive A H, et al.(1987). Gastric carcinoma in the young. *Cancer*, **59**, 1362-5.