International Journal of Research in Medical Sciences
Younis M et al. Int J Res Med Sci. 2022 Mar;10(3):617-621
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20220389

Original Research Article

Clinicopathological profile and operative outcomes of gastric cancer patients in Kashmir: a high incidence area

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Received: 25 January 2022
Revised: 09 February 2022
Accepted: 10 February 2022

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ABSTRACT

Background: The objective of the present study was to analyse the demographic, clinicopathological and perioperative outcome of patients undergoing D2 gastrectomy in a high-volume tertiary care hospital in Kashmir a high incidence area.
Methods: A total of 89 gastric cancer patients operated in the department of surgical gastroenterology, SKIMS, Kashmir, from January 2018 to December 2021 were included. A standardized D2 lymphadenectomy with spleen/pancreas preservation was performed.
Results: Most of the patients in our study were elderly males and the mean age of patients in our series was 60.12±9.4. Majority of the patients in this study had stage III (91%) disease. Nodal involvement (N2, N3) was seen in 66% of patients. The average blood loss during operation was (380.23±48.53 ml) in our patients. The mean number of harvested lymph nodes was (26.6±10.1) with the range of (12-40). Mean operative time was (180±32.58 min). Average hospital stay was (8±2.46 days) in this series.
Conclusions: Data from our study suggests that D2-gastrectomy when performed by skilled team in high volume centre like SKIMS is safe and should be the standard of care for gastric cancer for improved outcome.

Keywords: Gastric cancer, Kashmir, Gastrectomy, Outcome, SKIMS, D2, Lymphadenectomy

INTRODUCTION

Gastric cancer is one of the most common cancers worldwide being fourth largest killer among all cancers worldwide.[1,2] The disease shows significant geographical, ethnic and socioeconomic differences in distribution. In the United States 22,220 patients are diagnosed annually, with 10,990 expected to die.[3] According to ICMR data the incidence of gastric cancer is approximately 34,000 per year, with a male preponderance (male-to-female ratio, 2:1). As per a recent survey of cancer-related mortality in India, gastric carcinoma was the second most common cause in both genders with the highest incidence reported from the North East Kashmir is a landlocked geographical entity located at a very high altitude, has a unique ethnic population with distinct dietary habits.[4] It has been traditionally considered to be an endemic cancer zone with peculiar cancer profile. In this region cancer of the stomach, ranks among the top 3 cancers.[5,6] Moreover there has been a rising trend in young patients in recent years.[6] Thus, gastric cancer will continue to represent an important cause of cancer and cancer-related mortality for

the foreseeable future. Radical gastrectomy with D2 lymphadenectomy remains the current standard of care for non-metastatic, resectable T3/T4 gastric cancer.[7] East Asian surgeons, especially Japanese and Korean surgeons, routinely perform D2 lymph node dissection. However, the western counterparts have not accepted D2 lymphadenectomy as standard procedure and continue with traditional D1 dissection. Some trials from the west have shown mixed results of morbidity and survival.[8-12] The higher morbidity and uncertain oncological benefit had been bone of contention for accepting D2 lymphadenectomy as a standard surgical procedure in several centres in the west. One of the important prognostic indicators is the presence and the number of involved lymph nodes. However, the inadequacy of lymphadenectomy of gastric cancer resection is notable, even among patients treated predominantly even at academic institutions in contemporary North American series.[13-16] The accuracy of staging and survival are influenced by the accurate lymphadenectomy though this being still debatable.[17-19] The relationship between number of nodes and outcomes was illustrated in a series of 1038 patients undergoing potentially curative resection for gastric cancer.[18] The location of positive nodes did not significantly affect median survival, while the number of positive lymph nodes had a profound influence on survival provided that at least 15 lymph nodes were available for analysis.[19] The AJCC staging guidelines recommend that at least 16 regional nodes be assessed pathologically but that removal/evaluation of more nodes (30 or more) is desirable.[20] The same guidance applies to patients treated with neoadjuvant therapy. Results of D1-D2 Dutch trial demonstrated an overall 15-year survival in 21% patients of D1 group and 29% in the D2 group with low mortality in D2 group.[21-23] This supports the concept that if the D2 dissection can be done with low operative mortality or similar to that of a D1, survival will be positively impacted. Recent systematic review and meta-analysis that identified 28 articles, reported the relationship between hospital and surgeon factors with procedure-related morbidity, procedure-related mortality, and five-year survival for gastric cancer surgery.[24] It was suggested that higher hospital volume was associated with lower, unadjusted procedure-related mortality. Further surgeon volume, level of training, hospital volume and specialization were also associated with procedure-related morbidity, procedure-related mortality and five-year survival, but the effect was not consistent across all studies. The objective of the present study was to analyse the demographic, clinicopathological and perioperative outcome of patients undergoing D2 gastrectomy in a high-volume tertiary care hospital in Kashmir a high incidence area.

METHODS

A total of 89 gastric cancer patients operated in the department of surgical gastroenterology, SKIMS from January 2018 to December 2021were enrolled for this observational study. Retrospective analysis of prospectively maintained data was done. Eligibility criteria were a histologically proven adenocarcinoma of the stomach without evidence of distance metastasis, age younger than 80 years. A standardized D2 lymphadenectomy with spleen/pancreas preservation was performed. D2 resection was performed by specialists trained in upper gastrointestinal surgery.

Surgical technique

D2-gastrectomy was done in a standardized manner. Types of gastrectomy included proximal, subtotal (distal) and total gastrectomy for gastric cancer, along with a D2 lymphadenectomy. For tumors in the antropyloric region or in the distal body a subtotal (distal) gastrectomy was preferred with at least 5 cm proximal margin. For lesions in the proximal/mid-body or cardia of the stomach, a proximal gastrectomy was performed. Total gastrectomy was done for lesions in the GE junction or proximal body. Prophylactic splenectomy was not routinely performed with total gastrectomy owing to the risk of increased morbidity. The extent of lymphadenectomy was done according to the type of gastrectomy in accordance with Japanese gastric cancer treatment guidelines 2014 (version 4).[25] All patients received adjuvant chemotherapy whereas 4 patients received adjuvant radiotherapy as the lymph node yield in these patients was 12 only. Clinical, pathological and surgical details of the patients were properly recorded.

Statistical analysis

All categorical data were expressed in percent and absolute number. All numerical continuous data were expressed in mean±SD. Data was entered in Microsoft excel 2010 to perform the analysis.

RESULTS

A total of 89 patients who underwent curative intent surgery for gastric cancer were included in this study out of which 62 (69.66%) were males 27 (30.33%) were female with male-female ratio of 3:1 and mean age of presentation was 60.12 range (30-80) years. The most common presentation was gastric outlet obstruction (GOO) as majority of cases in this series had distal stomach tumors (58.42%) followed by proximal tumours including gastroesophageal junction (GEJ) tumours. Anaemia was the second most common symptom (54%). Fifty-five patients underwent distal radical gastrectomy followed by total gastrectomy and proximal gastrectomy in 25 and 9 patients respectively. Most of the patients in our series presented at advanced disease stage/stage III (91%) disease. In our study 72% of patients were having (T3/T4) tumors. Nodal involvement (N2, N3) was seen in 66% of patients. The average blood loss during operation was (380.23±48.53 ml) in our patients. Mean operative time was (180±32.58 min). The mean number of harvested lymph nodes was (26.6±10.1) with the range of

12-40. Average hospital stay was observed to be (8±2.46 days) in this series of patients.

Table 1: Clinicopathological features of gastric cancer patients.

Characteristics		N (%)
Age (mean years)		60.12±9.4 (20-80)
Sex	Male	62 (69.66)
	Female	27 (30.33)
Age	<50	20 (22.47)
	≥50	69 (77.52)
Location of tumour	Proximal	27 (30.33)
	Body	10 (11.23)
	Distal	52 (58.42)
Main presentation	GOO	52 (58)
	Bleeding (anemia)	48 (54)
	Pain abdomen	20 (22)
T stage	T1	8 (8.98)
	T2	10 (11.23)
	T3	28 (31.46)
	T4	43 (48.31)
N stage	N0	9 (10.11)
	N1	14 (15.73)
	N2	25 (28.08)
	N3	41 (46.06)
TNM stage	Stage I/II	8 (9)
	Stage III	81 (91)
Tumor grade	Well differentiated	10 (11.23)
	Moderately differentiated	26 (29.21)
	Poorly differentiated	53 (59.55)
Type of surgery	Distal gastrectomy	55 (61.79)
	Proximal gastrectomy	9 (10.11)
	Total gastrectomy	25 (28.08)

Table 2: Operative parameters of gastric cancer patients.

Operative parameters	Values
Mean operative time (min)	180±32.58
Average no of nodes harvested	26.6±10.1
Mean blood loss (ml)	380.23±48.53
Mean hospital stay (days)	8±2.46

Table 3: Post-operative complications of D2 gastrectomy.

Post-operative complications	Value (%)
Surgical site infection (SSI)	9 (10.11)
Duodenal leak	2 (2.24)
Atelectasis	11 (12.35)
Intraabdominal collections	2 (2.24)
Anastomotic leaks	2 (2.24)
DVT	3 (3.48)
Bleeding	1 (1.12)
In hospital death	Nil

Post-operative complications	Value (%)
Complications (Clavien-Dindo grade)	
Grade I	12 (13.48)
Grade II	8 (8.95)
Grade III	2 (2.24)
Grade IV	3 (3.37)
Grade V	1 (1.12)

Post-operative morbidity and mortality

There were no major postoperative complications reported in our patients as depicted in Table 3. Two patients had intraabdominal collections, managed by percutaneous drainage and anastomotic leaks in 2 patients that was managed conservatively. Two patients showed duodenal stump leak, again managed conservatively. None of the patients required re-exploration. There was no in hospital mortality or mortality within 30 days of discharge from hospital.

DISCUSSION

This study focussed on analysing the demographic, clinicopathological and peri-operative results of patients undergoing D2 gastrectomy in Sher-i-Kashmir institute of medical sciences-a high volume tertiary care hospital in Kashmiri population. Most of our patients presented with symptoms of absolute or partial gastric outlet obstruction followed by melena or hematemesis so majority were taken up for upfront surgery but extra-nodal involvement, was identified mostly in postoperative histopathology. NACT was offered to patients having tumor at GE junction and body of stomach. Patients were not offered NACT if they were presenting as partial or total GOO or bleeding. We believed that real clinical practice was different in different countries and decisions were based on what was best in that scenario.

In Japan and South Korea radical gastrectomy with D2 lymphadenectomy had been the standard of surgical management for decades. Several Japanese and Korean retrospective studies had demonstrated low morbidity and high survival rates with D2 lymphadenectomy.[8,26,27]

A fifteen-year follow up results of Dutch Gastric cancer trial, demonstrated improvement in DFS and cancer-related death following D2 lymphadenectomy compared with D1 dissection, hence recommended spleen-preserving D2 lymphadenectomy as standard surgical procedure for gastric cancer.[11] An Italian study also showed possible benefit with D2 dissection in patients with high nodal burden even though statistically significant difference in survival could not be demonstrated.[16] In our institute D2 lymphadenectomy had been adopted as standard surgical procedure for stomach cancer and all the gastric cancer surgeries were performed by single specialised unit following the standardised techniques. In our series 2/3rd of patients

were male with average age of 60 years and male female ratio of 3:1. The male preponderance was in line with data from the American cancer surveillance database, surveillance, epidemiology and end results (SEER) and other studies.[28-31,34]

In keeping with other reports from India, the most of the patients in our series presented at advanced disease stage/stage III (91%) disease, consistent with data reported from other Indian centres.[37] A similar trend was seen in other regions where population-based cancer screening was not done such as America, Europe and China.[33-35] In our study the most common tumour location in both groups was antropyloric (58.42%) in contrast to an earlier study from valley.[38] In which the commonest site of cancer was the body of stomach 40.7%, followed by the antrum (35.5%) suggesting a possible changing trend in the location of gastric tumor in this region. Other studies from India also suggested distal/antral tumours more frequent than proximal tumors.[36] In this study average lymph node yield was 26 and mean operative time was (180±32.58 min). There was an average hospital stay of 8 days. These results were consistent with other reports from India.[36,37] In our study there was no major postoperative complications associated with the resection and postoperative morbidity (Clavien-Dindo II) was encountered in only 8.95% of patients. There was no in-hospital mortality and no mortality within 30 days of discharge.

Limitations

Study limitations were inherent to retrospective study design and relatively small sample size. In addition, this study lacked the analysis of patient survival.

CONCLUSION

D2 gastrectomy was performed successfully in all patients in this series with no major morbidity or mortality. Data from our study suggests that D2-gastrectomy when performed by skilled team in high volume centre like SKIMS is safe and should be the standard of care for gastric cancer for its improved outcomes and better management of the disease.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Younis M, Ali S, Qadri AI, Yousuf A, Vane A, Bhat MH. Clinicopathological profile and operative outcomes of gastric cancer patients in Kashmir: a high incidence area. Int J Res Med Sci 2022;10:617-21.