Journal of Rawalpindi Medical College (JRMC); 2017;21(1): **48-50**

Original Article

Gastric Outlet Obstruction – An Etiological Breakup

Arslan Shahzad [1], Inayatullah Khan Adil[2], Mashood Ali[2], Muhammad Osama [1], Mahrukh Laghari[2], Zain Sharif[2]

1. Department of Gastroenterology, Holy Family Hospital and Rawalpindi Medical College;2.Department of Gastroenterology, Pakistan Institute of Medical Sciences (PIMS) Islamabad

Abstract

Background: To evaluate the etiology of gastric outlet obstruction in Pakistani population.

Methods: In this descriptive study patients with gastric outlet obstruction were included .All patients included in the study received intravenous fluids and electrolytes to correct dehydration and electrolyte imbalance. Nasogastric suction with gastric lavage was done. Diagnosis was established by UGI endoscopy and biopsy and was supported by CT scan and barium studies where required.

Results: The total number of patients was 39 with 19 males (48.7%) and 20 females(51.3%). The age of patients ranged from 15 years to 70 years. The mean age was 43.41 ±16.57. The most common pathology leading to gastric outlet obstruction was malignancy, in 21 (53.8%) patients whereas 18 patients (46.2%) had benign disease. Among the malignancies, gastric carcinoma was the most common disease affecting 14 patients (35.9%) and among the benign diseases, caustic injury induced stenosis was the most common, involving 14 patients (35.9%). Pancreatic carcinoma was found in 3 patients (7.7%) and peptic ulcer disease in 4 patients (10.3%).

Conclusion: Gastric outlet obstruction is a serious and difficult to manage problem. Malignancy was the most common cause (53.8%) of gastric outlet obstruction. Post caustic gastric outlet obstruction has emerged as the second most common(35.9%) cause. Caustic stricture leading to gastric outlet obstruction is emerging as a serious health care issue in developing countries, especially among young females with poor socioeconomic status.

Key Words: Gastric outlet obstruction, Malignancy, Castic stricture

Introduction

Gastric outlet obstruction is a clinical syndrome characterized by partial or complete mechanical impediment to the flow of gastric contents from stomach to the small gut. The causes may range from obstructing mass lesion intraluminally to extrinsic compression, edematous pylorus, scarring/cicatrization or fibrosis secondary to duodenal ulcers. It leads to electrolyte and acid-base imbalance, nutritional deficiencies and weight loss. The causes can broadly be classified into benign and malignant. Till 1970's peptic ulcer disease was thought to be most common cause of gastric outlet obstruction in upto 91% cases while malignancies accounted for 6%. [1] However, with the advent of H-2 blockers, proton pump inhibitors, H. pylori treatment and advanced techniques for early diagnosis with the help of flexible endoscopes the diagnosis of malignancy as cause of outlet obstruction has increased. At present malignancy accounts for 50-80% of cases. [2-4]

In recent years a rise in the incidence of gastric outlet obstruction has been noted as a consequence of caustic injury which is largely unreported in developing countries, where prevention is lacking and it causes serious healthcare concern.[5,6]

Corrosive agents contain acid and alkalis like Hydrochloric acid, Nitric acid, Sulphuric acid, Sodium Hydroxide and other substances used in washroom cleaners, drain openers and batteries. These are ingested accidentally or to inflict self-harm. Their ingestion may lead to visceral perforation, severe esophageal, gastric and duodenal injuries leading to strictures at these places. Easy availability of hydrochloric acid as cheap toilet cleaners has made its widespread use in developing countries for suicidal purpose.[7]Gastric outlet obstruction results when there is stenosis of pylorusor the duodenum. Gastrojejunostomyor partial gastrectomy are the common treatmentmodalities.Other malignancies causing gastric outlet obstruction are gastric lymphoma, duodenal carcinoma and ampullary carcinoma.Extraluminal malignancies are pancreatic cancer and gall bladder cancer.

Patients and Methods

This descriptive prospective study was conducted in Gastroenterology Unit, Pakistan Institute of Medical Sciences (PIMS), Islamabad,from July 2010-December 2011. All patients with clinical diagnosis of gastric outlet obstruction seen during the study period were consecutively included in the study. All patients recruited, received intravenous fluids to correct fluid and electrolyte imbalances, Nasogastric suctions with

gastric lavage was done. Patients with gastroparesis without mechanical obstruction were excluded along with those who were already diagnosed with cancer. Diagnosis was established by upper endoscopy and biopsy, and was supported by CT scan and barium studies. Data was analyzed using Statistical Package for Social Science (SPSS) version 21. Mean + SD was calculated for quantitative variables like age while frequencies and percentages were calculated for qualitative variables, i.e gender and etiology

Results

During the study period, a total of 39 patients of gastric outlet obstruction were enrolled. The age of patients ranged from 15 years to 70 years. The mean age was 43.41 ±16.57. There were 19 males (48.7%) and 20 females (51.2%). (Table 1). The malignant gastric obstruction was found to be more common in males, however caustic strictures leading to obstruction were three times more common in females than males. The etiology of gastric outlet obstruction was malignant in 21 (53.8%) cases while 18 (46.1%) had benign disease (Table 2). Caustic injury was commonest among benign group (77.7%) whereas commonest malignant lesion was gastric cancer (66.6%). Other malignancies included gastric lymphoma, pancreatic cancer, periampullary cancer and duodenal cancer.

Table 1. Age Group distribution

Age Group (years)	Gastric cancer	Lymph-oma	Pancr-eatic cancer	Periampu-llary cancer	Duodenal cancer	Peptic ulcer disease	Post caustic injury
15-20	-	-	-	-	-	-	4
21-30	-	-	-	-	-	1	8
31-40	1	-	-	-	-	1	2
41-50	2	-	1	-	-	-	-
51-60	7	1	2	2	1	2	-
61-70	3	-	-	-	-	-	-
71-80	1	-	-	-	-	-	-
Total	14(35.8%)	1(2.5%)	3(7.7%)	2(5.1%)	1(2.6%)	4(10.3%)	14(35.8%)
Malignant Benign	21(53.8% 18(46.2%)						

Table 2. Gender-wise etiology of gastric outlet obstruction (n=39)

Etiology	Male	Female	No (%)
Gastric Carcinoma	8	6	14 (35.8%)
Lymphoma	1	0	01 (2.5%)
Pancreatic Carcinoma	2	1	03 (7.7%)
Periampullary Carcinoma	2	0	02 (5.1%)
Duodenal Carcinoma	1	0	01 (2.6%)
Peptic Ulcer	2	2	04 (10.3%)
Caustic Injury	3	11	14 (35.8%)

Discussion

The malignant gastric obstruction was found to be more common in males, however caustic strictures leading to obstruction were three times more common in females than in males. The caustic stricture were found in relatively younger population below 40 years of age.The etiology of gastric outlet obstruction was malignant in 21 (53.8%) cases while 18 (46.1%) had benign disease. Caustic injury was commonest among benign group (77.7%) whereas commonest malignant lesion was gastric cancer (66.6%). Other malignancies included gastric lymphoma, pancreatic cancer, periampullary cancer and duodenal cancer. [3]

Gastric outlet obstruction has evolved in etiology over past decades from benign to malignant causes and poses significant diagnostic and therapeutic dilemma to treating doctors is developing countries lacking most resources therefore contributing to high morbidity and mortality. Cancer of the distal stomach is a very common cause of malignant outlet obstruction however, prior to advent of proton pump inhibitors, peptic ulcer disease was the single major contributor of gastric outlet obstruction. A local study in 1993 reported gastric malignancy of only 0.82% patients while gastric ulcer, duodenal ulcer and gastritis was reported in 26% patients.[9] With newer treatment options there was sharp decline in incidence of peptic ulcers and its complications.

Another rising cause of gastric outlet obstruction seen in adults is the sequel of caustic injury with reported incidence 60% of the pre-pyloric and pyloric channel obstruction.[6] Viscosity and specific gravity of corrosive acids are lower than that of liquid alkalis, hence acids are associated with rapid transit through the esophagus and the damage primarily occurs in the antrum and pyloric region of the stomach. Antral spasm also causes pooling of the corrosive and more damage to the antrum. Another reason for greater susceptibility of stomach is its columnar epithelium whereas esophagus has a more resilient squamous epithelium.[10] The degree of mucosal injury depends on the nature of the agent, the amount and concentration ingested, the amount of food in the stomach at the time of ingestion and the mode of ingestion. The late complications of corrosive gastric injury include intractable pain, gastric outlet obstruction, late achlorhydria, protein-losing gastroenteropathy, mucosal metaplasia, and development of carcinoma.[6]

In pyloric stenosis secondary to caustic strictures, dilatation can be carried out with balloon or bougies (usually Savary) without a clear advantage for each method.[11] However, the failure rate after pneumatic dilatation is higher in caustic ingestion-related strictures than in other benign strictures.[12] Gastric resection reported in 59–93%, is safe, free of complications, and eliminates the long-term risk of malignancy. Mucosal metaplasia with carcinoma has

been reported in adults[13]. Hence gastric resection remains the treatment of choice.[14-15] Pyloroplasty, though advocated is not recommended for cicatrized pyloric obstruction because the scarring is not limited to the pylorus but affects the adjacent tissues as well, and is not an adequate long-term solution.

The outcome of treatment of gastric outlet obstruction may be poor especially in developing countries where advanced diagnostic and therapeutic facilities are not readily available in most centers.[16] Failure of medical therapy is common and the option left is surgical, and significant obstruction is the indication of surgery; and almost 75% patients of gastric outlet obstruction require surgical intervention.[17] This usually provides definitive treatment but may result in its own comorbid consequences. The most common surgeries performed related to peptic ulcer disease are vagotomy and antrectomy, vagotomy and pyloroplasty, truncal vagotomy and gastrojejunostomy. The management of malignancy is controversial. Most tumors are unresectable at the time of diagnosis with poor 1-year survival rate. Gastrojejunostomy is the treatment of choice to palliate malignant gastric and duodenal obstruction but the mortality and morbidity rates are quite high.[18]

Conclusion

1. Gastric outlet obstruction is a common problem in low socioeconomic population posing long term challenges in diagnosis and therapeutic intervention.
2. Etiology of gastric outlet obstruction has evolved from benign to malignant causes. The benign gastric outlet obstruction is seen in relatively younger patients whereas malignancy is seen in older patients. Benign causes of obstruction are changing in frequency from peptic ulcer disease to caustic stricture .
3. Gastric cancer is the commonest malignant cause of gastric outlet obstruction.

References

1. Goldstein H, Boyle JD. The saline load test: A bedside evaluation of Gastric retention. Gastroenterol 1965; 49(4): 375-80.
2. Shone DN, Nikoomanesh P, Smith-Meek MM, Bender JS. Malignancy is the most common cause of gastric outlet obstruction in the era of H2 blockers. Am J Gastroenterol 1995; 90: 1769-70.
3. Johnson CD, Ellis H. Gastric outlet obstruction now predicts malignancy. Br J Surg1990; 77: 1023-24
4. Samad A, Whanzada TW,Shoukat I. Gastric Outlet Obstruction: Change in etiology. Pak J Surg 2007; 23(1) 29-32.
5. Zargar SA, Kochhar R, Nagi B. Ingestion of strong corrosive alkalis: spectrum of injury to upper gastrointestinal tract and natural history. Am J Gastroenterol 1992; 87:337.
6. Contini S, Scarpignato C. Caustic injury of the upper gastrointestinal tract: a comprehensive review. World J Gastroenterol, 2013 ;19(25):3918-30.
7. Agarwal S, Sikora SS, Kumar A, Saxena R, Kapoor VK. Surgical management of corrosive strictures of stomach. Indian J Gastroenterol, 2004; 23:178–80.
8. Howard KG, Holmes CL. Pyloric stenosis caused by ingestion of corrosive substances: Report of case. SurgClin North Am ,1948; 28:1041-56.
9. Hussain R, Rathore AH. Incidence of various upper gastrointestinal diseases as diagnosed by endoscopy in Faisalabad. Pak J Gastroenterol, 1993; 7(1): 60-64
10. Maggi AL and Meeroff M. Stenosis of the stomach caused by corrosive gastritis. Gastroenterol 1993; 24:573–78.
11. Siersema PD, de Wijkerslooth LR. Dilation of refractory benign esophageal strictures. Gastrointest Endosc , 2009; 70:1000–12
12. Sandgren K and Malmfors G. Balloon dilatation of oesophageal strictures in children. Eur J Pediatr Surg, 1998; 8:9–11
13. Mc Auley CE, Steed DL, Webster MW. Late sequelae of gastric acid injury. Am J Surg 1985; 149:412–15
14. Feng J, Gu W, Li M, Yuan J, Weng Y, Wei M. Rare causes of gastric outlet obstruction in children. Pediatr Surg Int, 2005; 21:635–40
15. Tekant G, Eroglu E, Erdogon E, Yesildag E, Emir H. Corrosive injury – induced gastric outlet obstruction: a changing spectrum of agents and treatment. J PediatrSurg 2001; 36:1004–07.
16. Appasani S, Kochhar S, Nagi B, Guptav R, Kochhar R. Benign gastric outlet obstruction-spectrum and management. Trop Gastroenterol 2011; 32:259-66.
17. Doherty GM, Way LW (Eds): Current Surgical Diagnosis & Treatment. 12th edition. New York: Mcgraw-Hill; 2006
18. Dabizzi E, Arcidiacono PG (2016) Update on Enteral Stents. Current Treatment Options in gastroenterology, 2016.