

Gastric outlet obstruction in Northwestern Ethiopia

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This was a three-year prospective study to assess the magnitude and spectrum of gastric outlet obstruction in Gondar Teaching Hospital, North West Ethiopia. Out of the 63 proven cases of gastric outlet obstruction, 51 (81%) were caused by complicated duodenal or pyloric ulcer. Pyloric tuberculosis accounted for 11% of cases. Many (48%) of the patients were farmers and the peak age incidence was between 50 and 59 years. Four of the patients were in shock on admission.

Truncal vagotomy with gastroenterostomy was the most frequently performed procedure with a good outcome. This study shows that peptic ulcer disease is a serious problem in the community. More effort is needed to make effective drugs against peptic ulcer disease available. Moreover, in our set up, tuberculosis should always be borne in mind as a differential diagnosis to the other causes of gastric outlet obstruction such as complicated peptic ulcer disease and malignancy.

Introduction

Peptic ulcer disease is a well known cause of gastric outlet obstruction (GOO) but it was said to be a rare condition in Africa^{1,2,3}. The incidence, however has been increasing during the last 40 to 50 years¹⁻⁵. In their survey of peptic ulcer disease in the Sub-Saharan Africa, Tovey and Tunstall¹ put Ethiopia as one of the African countries with a higher prevalence. Most authors in Africa agree that

pyloric stenosis is the commonest complication of peptic ulcer¹⁻⁷. This is not in line with reports from developed countries where haemorrhage is the most frequently encountered complication^{9,10}. Besides peptic ulcer, tuberculosis and malignancies are also well known causes of GOO.

The diagnosis of GOO *per se* is not a problem. The difficulty lies rather in determining the pathology. A previous report from Ethiopia¹¹ showed the challenge in diagnosing and differentiating gastric and pyloric tuberculosis from complicated duodenal ulcer and malignancy as a cause of GOO. The purpose of this study is to assess the magnitude and spectrum of GOO in North West Ethiopia.

Patients and methods

This prospective study was conducted between July 1993 and June 1996 in Gondar College of Medical Sciences Hospital. Long standing non-bilious vomiting of ingested material accompanied by progressive weight loss was considered the clinical indicator of gastric outlet obstruction (GOO). The clinical diagnosis had to be proven intra-operatively to include the case in the study. Accordingly, all those cases with clinical and operative diagnosis of GOO were included in the study.

Because we had meagre resources, a thorough pre-operative investigation to determine the cause of GOO could not be done in every case. At operation, the diagnosis of GOO was made by

noting a cicatrised first part of duodenum or pylorus with a dilated and thick-walled stomach in cases of complicated peptic ulcer. Biopsy was taken from either a mass of peripyloric lymph nodes or any gastric mass for histological examination in the remaining patients. A pretested protocol was used to collect data on demographic characteristics, intra-operative findings, postoperative course and long term outcome. The patients were given appointments on discharge from hospital to come back after a month to the surgical referral clinic. If the patient's condition was satisfactory during the follow-up visits, he was discharged from follow-up and advised to come back for consultation if there was any complaint. As is true in any other developing countries, we cannot claim that the follow up was complete. Data was processed and analyzed using EPI INFO version 5 computer statistical package.

Results

Sixty-three patients were included in the study from July 1993 to June 1996. Thirty eight (60%) of these came from rural areas and 25 (40%) were town dwellers. Forty-six (73%) were males (M:F;2.7:1). Ages ranged from 16 to 78 years (mean 42 years (Table I). The highest proportion of patients were in their sixth decade.

TABLE I Age distribution of gastric outlet obstruction

AGE (YEARS)	FREQUENCY	(%)
10-19	2	3
20-29	11	18
30-39	14	22
40-49	13	21
50-59	18	29
60-69	4	6
70-79	1	2
TOTAL	63	

Considering the peptic obstructions separately, the sex ratio was M:F;3.3:1 and the age ranged from 25 to 68 years (mean 42.2 years). The peak age incidence for this same group of patients was similar to that of the other patients but there was a dramatic drop in incidence above 60 years.

Almost half of the cases were farmers by occupation (Table II).

Epigastric pain, non-bilious vomiting and weight

TABLE II Occupation of gastric outlet obstruction

OCCUPATION	FREQUENCY	(%)
Farmer	30	48
Housewife	11	18
Government employee	10	16
Merchant	5	12
Others	7	11
TOTAL	63	

loss were the presenting symptoms in 62 (98%) and only one patient, who was later found to be a case of gastric cancer, complained of an epigastric mass. Most (91%) claimed that intractable non-bilious vomiting and progressive weight loss were the compelling symptoms to seek medical help. Almost all claimed that the epigastric pain was aggravated by meals and relieved by vomiting.

The duration of the epigastric pain ranged from one month to 25 years. Forty-seven (75%) had suffered epigastric pain between one month and 10 years before presentation. The minimum duration of illness prior to presentation was for malignant obstruction while the maximum duration was for the peptic obstruction. The duration ranged between 9 months and 25 years for peptic obstruction.

The duration of vomiting prior to presentation ranged from one month to 24 years. Only 34 patients (54%) presented within 12 months of the onset of vomiting. Regarding those cases of GOO secondary to peptic ulcer, nine (18%) of them claimed concomitant onset of epigastric pain and vomiting, while in the remaining 42 (82%) epigastric pain preceded vomiting with a duration ranging from one year to 24 years (mean seven years).

Of the 59 patients with non-malignant obstruction, 15 had never had anti-ulcer treatment. Thirty-five (59%) had taken either antacid tablets or suspensions while 9 (15%) had been treated with antacid and cimetidine.

The pre-operative clinical diagnosis of GOO was supported by barium meals in 15 and by endoscopy in one patient respectively. In the remaining 47 cases the diagnosis was based on history and physical findings alone.

Almost all patients were emaciated on admission. Nine (14%) were dehydrated, four of whom were in shock.

All of the cases with suspected cancer as a cause of obstruction had a hard and irregular epigastric mass.

Most patients had a succussion splash. Total serum protein was determined in 16 patients of whom two had levels below normal.

Fifty-seven patients (91%) were admitted with a diagnosis of GOO secondary to peptic ulcer disease. The final diagnosis which was reached after operation revealed peptic obstruction in 51 (81%) of the cases. Tuberculosis ranked second as a cause of GOO (Table III).

TABLE III Admission diagnosis versus final diagnosis of GOO patients.

ADMISSION DIAGNOSIS			FINAL DIAGNOSIS *		
Diagnosis (Causes of GOO)	Freq uency	(%)	Diagnosis (Causes of GOO)	Freq uency	(%)
Peptic ulcer	57	91	Peptic ulcer	51	81
Gastric cancer	3	5	Tuberculosis	7	11
Tuberculosis	2	3	Gastric cancer	3	5
Pancreatic cancer**	1	2	Pancreatic cancer*	1	2
Adhesion	0		Adhesion	1	2
TOTAL	63		TOTAL	63	

Diagnosis reached after intra-operative finding and histopathology excepting the two un-operated malignant obstructions.

** Has had previous laparotomy for obstructive jaundice.

TABLE IV Table of operations performed in sixty-one cases of GOO patients.

TYPE OF OPERATION	FREQ UENCY	(%)
Truncal vagotomy with gastroenterostomy	44	72
Truncal vagotomy with Heineke-Mikulicz pyloroplasty	7	12
Truncal vagotomy with Finney pyloroplasty	6	10
Heineke-Mikulicz pyloroplasty	1	2
Gastro enterostomy (for malignant obstruction)	1	2
Adhesolysis	1	2
Laparotomy only (for malignant obstruction)	1	2

N. B. Two cases with terminal malignancy were not operated upon.

The types of operations in 61 patients (two of the malignant cases were not operated upon) are shown in table IV. Truncal vagotomy with gastroenterostomy was the most frequently performed operation. The mean postoperative hospital stay was $11.1 \pm SD 3.1$ days. Eighty percent of patients were discharged within 12 days of operation. All the non-malignant cases of obstruction were discharged improved.

Both of the patients operated upon for malignancy deteriorated and were taken home by their relatives while the other two malignant cases were discharged without operation.

The overall early postoperative complication rate was 24.5% and included diarrhoea (3), dumping (5) and pneumonia (3 cases). One patient developed intestinal obstruction due to internal hernia but improved after laparotomy. The late complication rate which was recorded on follow up of the non-malignant cases was 12% of which dumping comprised 7% and obstruction symptoms recurred in 5% (Table V). The three recurrences were all in patients on whom a Heineke-Mikulicz pyloroplasty was performed.

TABLE V Postoperative complication of GOO patients.

EARLY (Post operative hospital course)			LATE (Course on follow-up)		
Complication	Freq uency	(%)	Complication	Freq uency	(%)
Dumping	5	8	Dumping	4	7
Diarrhoea	3	5	Diarrhoea	3	5
Pneumonia	3	5	No Complication seen	52	81
Intestinal obstruction	1	2			
Epigastric Distension	1	2			
Deteriorated **	2	3			
No Complication seen	46	76			
TOTAL	61			59	

** Malignant obstruction

Discussion

Gastric outlet obstruction (GOO) is a frequent cause of surgical admissions to the Gondar Teaching Hospital, comprising 2.6% of all surgical admissions and 14.6% of the general surgical problems¹². Including researchers from our country^{6,7}, most African authorities agree that pyloric stenosis is the commonest complication of duodenal ulcer in

Africa¹⁻⁵. In this series, complicated duodenal or pyloric ulcer accounted for 51 (81%) of patients with GOO. Though the overall sex ratio was M:F;2.7:1, the figure (M:F;3.3:1) increased for peptic obstruction. This is in line with most reports from Africa and Asia¹⁻⁸.

Most of the reports from developing countries show that the peak age incidence for duodenal ulcer patients is between 30 and 40 years²⁻⁸ but, in this study, the peak age incidence for peptic obstruction was between 50 and 59 years. This discrepancy may be due to the fact that our study comprised only complicated duodenal ulcers which were causing GOO.

In line with previous report by Ali⁷ from Addis Ababa, 30 (48%) of our patients were farmers by occupation. The dominance of farmers may be partly explained by the fact that the majority of the population in Ethiopia are rural dwellers¹³ which may also hold true for developing countries as a whole. Moreover, as compared with urban dwellers, farmers have minimal access to proper and effective medical treatment.

The duration of illness for complicated duodenal ulcer patients was from nine months to 25 years which is in agreement with other reports from Ethiopia^{6,7} and elsewhere^{1,4,5}. It is worth noting that nine (18%) of the pyloric stenosis patients secondary to complicated peptic ulcer had no previous history of ulcer symptoms prior to the onset of vomiting. Absence of previous ulcer symptom is an established fact in 20% of patients admitted with perforation complicating duodenal ulcer^{14,15}.

Tuberculosis accounted for GOO in seven patients (11%), of whom five were females. Their ages ranged from 16 to 78 years (mean 38 years) which contrasts with another report from Addis Ababa, that showed a male preponderance and a mean age of 28 years¹¹. The tuberculous obstruction cases were relatively younger than the complicated peptic ulcer cases. A pre-operative diagnosis of tuberculosis was entertained in only two patients. One was a 16-year-old girl who was a defaulter from anti-tuberculosis treatment for pulmonary tuberculosis and the other was a 19-year-old girl who presented with a six-month history of non-bilious vomiting, weight loss, intermittent fever and night sweating with no previous ulcer

symptoms. This is in accordance with the previous report by Johnson and Edemariam¹¹ who commented on the difficulty of differentiating the symptoms and signs of gastric and pyloric tuberculosis from those of either duodenal ulcer or gastric carcinoma.

Although we recognised tuberculosis from the intra-operative findings (mass of lymph nodes at the pyloroduodenal area which were caseous), the diagnosis was confirmed by histopathology. On the first tuberculous patient we encountered, biopsy was taken without a drainage procedure, hoping that the patient would respond to anti-tuberculosis treatment. However, the patient continued to vomit over the next three months which necessitated surgical intervention. At re-laparotomy, pyloric constriction was evident, despite disappearance of the previously enlarged peripyloric lymph nodes. Following truncal vagotomy and gastroenterostomy, the patient improved and gained weight. Thereafter we made it our policy to offer surgical treatment in addition to the medical treatment despite clear knowledge of tuberculous obstruction.

Although 47 patients had no pre-operative confirmatory investigation, the intra-operative diagnosis of GOO was clearly evident. GOO is evident on clinical grounds alone but diagnostic facilities would be of some help in determining the exact cause of obstruction.

Four patients were in shock on admission, of whom one showed the classic symptoms of electrolyte imbalance and responded to intravenous fluid resuscitation and potassium chloride replacement. It is important to recognise fluid and electrolyte depletion in patients presenting with symptoms of GOO to avoid serious complications.

Truncal vagotomy and drainage was the treatment used, except for malignant obstructions, and gastroenterostomy was the most frequently performed drainage procedure. This is in line with other reports from Addis Ababa^{6,7} and from Kenya⁵. In the face of long standing obstructive symptoms the choice of gastroenterostomy is justifiable as the scarring and adhesions in the pyloroduodenal area makes pyloroplasty difficult. The draw back of pyloroplasty in such situations is clearly shown in this study where three of seven patients, in whom

Heineke-Mikulicz pyloroplasty was performed, presented with recurrent symptoms of obstruction.

The overall postoperative complication in the early post operative period was 24.5%. Dumping, diarrhoea and pneumonia were the leading complications. On follow-up, mild dumping was encountered in four patients but no one came complaining of diarrhoea. In contrast to this, Kronborg¹⁶ reported light to moderate dumping in 22%, with severe dumping in 4%, and diarrhoea in 21% after vagotomy and drainage. Alan and Michel¹⁷ studied bowel habit after vagotomy and gastro-jejunostomy and reported transient diarrhoea in 10% and increased daily bowel frequency in 71% of patients. Since our follow up is an incomplete one, the absence of a single case with diarrhoea should not be stressed. Patients with mild symptoms may not appear for consultation.

Selective vagotomy, originally advocated to minimise post vagotomy diarrhoea, has not proven an effective alternative to truncal vagotomy^{18,19}, which is practised by most of African authors⁴⁻⁷.

The average postoperative hospital stay was 11.1 days and 80% of patients were discharged within 12 days. This is in line with others results¹. There was no death, although the two patients with malignant obstruction deteriorated soon after surgery and were taken home, moribund, by their relatives. All the patients with malignant obstruction had a palpable epigastric mass which signified that it was too late to offer definitive treatment.

In conclusion, gastric outlet obstruction is one of the commonest surgical conditions in the North West Ethiopia and duodenal or pyloric ulceration is the commonest cause. Peptic ulcer disease is a prevailing problem in the community and due attention should be given to making effective drugs available to patients. Upon encountering a mass of lymph nodes and/or an antral mass at operation, in a patient with symptoms of gastric outlet obstruction, tuberculosis should be borne in mind rather than focusing only on malignancy. Truncal vagotomy with gastroenterostomy is effective and safe way of handling patients with non malignant GOO.

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