The role of surgery for peptic ulcer in eastern Ethiopia

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This was a retrospective study of 90 patients operated on for peptic ulcer disease (PUD) in Karamara Hospital, Ethiopia, between 1st April 1994 and 31st March 1995. Seventy-eight patients were admitted with a preliminary diagnosis of gastric outlet obstruction secondary to PUD (86%) and 12 as intractable PUD.

The diagnosis was based solely on the history and physical examination as neither barium meal fluoroscopy nor endoscopy were available. At operation a scarred duodenum and a large stomach were found in 71 patients (79%), an active ulcer without stenosis in 10, and a stenosed duodenum with mesenteric tubercles in two. In three, there were no abnormal findings.

There were four patients under 20 years old and seven over 60. The peak-age was 39 years. There were 88 males and only two females. Truncal vagotomy with gastrojejunostomy was the operation performed for 84 cases of PUD. An accurate diagnosis had been made by clinical examination in 82 out of 90 patients.

Twenty-one patients (23%) suffered early postoperative complications with pneumonia as the commonest (7). The only two 'ulcer related complications' were one case of upper gastrointestinal bleeding and intractable postoperative vomiting in one patient.

It is interesting that, during the twelve months surveyed, no patients presented with either bleeding or with perforation. No late complications or deaths occurred during the study period or the following three months.

Introduction.

At the end of the 19th Century, peptic ulceration became recognised as an increasingly important cause of morbidity[1] but for unknown reasons the incidence has been declining in the West and is now less than half of what it was 20 years ago[2]. Both the incidence of peptic ulcer disease (PUD) and the ratio of gastric ulcer (GU) to duodenal ulcer (DU) have changed considerably since the 19th Century and, since the middle of the 1960s, the ratio has been reversed with a relative increase in the incidence of DU[1].

In developing countries, however, peptic ulcer disease and its complications, particularly stenosis, does not seem to be showing an appreciable decline[3]. In Ethiopia there are no reliable 'base-line' statistics of non-communicable diseases[4] but in Addis Ababa radiologically confirmed duodenal ulceration accounted for 2.5% of 6,640 medical admissions during 1986[5].

A prospective study in Addis Ababa of 200 endoscopically proven cases of duodenal ulcer showed the peak to be in the age group 30-40 years with a sex ratio of M:F;3:1. The commonest complication was upper gastrointestinal bleeding[6]. It is

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interesting but not unexpected, that in Ethiopian surgical practice pyloric stenosis is found to be the commonest presenting symptom[7].

According to the 1994 annual report of Karamara hospital, PUD accounted for 7% of medical admissions, 12% of surgical admissions and 23% of all major surgical operations. The reason for making this survey was to study all the cases of PUD admitted and operated on in one year and to document any differences of incidence, presentation, types of operation performed and postoperative complication from similar studies both in Ethiopia and elsewhere.

Patients and methods

Jijiga town has a population of 90,000 and is located 635km to the east of Addis Ababa. It is the biggest town in the Ethiopian Somali Region (Jijiga Town Municipality Statistics Office). Karamara hospital, founded in 1960, has 130 beds and is the referral hospital for the region. It has a surgical ward of 36 beds and an adequately equipped operating theatre (Karamar Hospital Statistics Office, 1994).

This was a retrospective study of 90 patients operated on for peptic ulcer disease between 1st April 1994 and 31st March 1995 in Karamara hospital. All the operative procedures were performed by two surgeons. Data was collected from the patients' records. Because barium meal fluoroscopy and endoscopy were not possible, all diagnoses had been made clinically. Full clinical details had been recorded on admission when urine analysis, haemoglobin estimations and stool examinations were arranged. All patients were assessed pre-operatively by an anaesthetist. An Intravenous line and a nasogastric tube were inserted.

Truncal vagotomy with gastrojejunostomy was the operation performed except for those with either a pancreatic mass (1), gastric masses (2), or in three patients in whom no lesion was found. All the patients were reviewed one month and three months after surgery, and again if and when this was indicated.

Results

There were four patients under 20 years old and seven over 60. The peak age was 39 years. There were 88 males and only 2 females (Table I). The clinical diagnosis was confirmed at operation in 80 of the males (91%), and in all the females. One female was admitted with a diagnosis of intractable PUD and the other with gastric outlet obstruction.

On admission, 78 of the cases were diagnosed as having gastric outlet obstruction secondary to PUD and 12 were cases of intractable PUD. A scarred duodenum with a large stomach was found in 72 cases (80%) and in one of these there was penetration of the pancreas. These 72, together with 10 cases of active duodenal ulcer were treated by truncal vagotomy and gastrojejunostomy. One patient had a hard mass in the head of the pancreas which had infiltrated the duodenum and two had a mass in the pyloric antrum (Table II). In all three of these patients a biopsy was performed and the abdomen was then closed. Because no blood was available for transfusion it was thought better to delay resection. They proved to be a pancreatic carcinoma and two gastric carcinomas. Cholecystojejunostomy and gastrojejunostomy with truncal vagotomy was done for the patient with a pancreatic tumour but both the patients with gastric carcinoma refused further surgery. No antral ulcers were seen in this study.

No gastric or duodenal lesion was found at operation in three of the patients in the series and no further procedures were undertaken. Two patients had a stenosed duodenum with mesenteric tubercles and lymphadenopathy. A truncal vagotomy with gastrojejunostomy was performed and biopsy confirmed tuberculosis of the intestine.

Twenty-one patients developed early postoperative complications (23%). Seven patients suffered pneumonia but only two developed complications specifically related to the surgery. One was a case of gastrointestinal bleeding and the other was a patient who suffered intractable vomiting. These two patients were subjected to further laparotomy. In the former, a 'spurting' artery was found and ligated at the anterior anastomotic site but in the latter no cause was found for the vomiting and he was referred elsewhere for further investigation. Atelectasis was diagnosed in three patients, two patients developed diarrhoea and stool examination revealed trophozoites of *Entamoeba histolytica.* Both improved with metronidazole. Two patients had an urinary tract infection and two had an iodine burn of the scrotum after inadvertent spillage during pre-operative skin cleaning, (Table III).

The only recorded death was that of the patient with a pancreatic carcinoma. No significant complications occurred during the period of follow-up which was a minimum of three months.

TABLE I *Age and Sex of patients operated upon for peptic ulcer disease*

AGE (YEARS)	MALE	(%)	FEMALE	(%)
<20	4	4%		
20-39	39	34%	1	1%
40-59	38	42%	1	1%
60-79	7	8%		
TOTAL	88	98%	2	2%

TABLE II *Intra-operative findings*

FINDINGS	PATIENTS	(%)
Cicatrized duodenum	71	79
Stenosis with penetration to the pancreas	1	1
Pancreatic mass	1	1
Gastric mass	2	2
Stenosed duodenum	2	2
+ Mesenteric tubercles		
+ Lymphadenopathy		
Active ulcer	10	11
Negative	3	3
TOTAL	90	100

Discussion

During 1995, peptic ulcer disease was the commonest cause for admission to the 130 beds of the Karamara Hospital (15%). It was also the most frequent reason for major surgical operation (23%) (Karamara Hospital Statistics Office, 1994).

The literature has few relevant references to the problems of peptic ulcer disease in Sub-Saharan Africa and some of these are relatively old. In 1985, Mekuria[7] reported operations on 725 patients with this problem at St Paul's Hospital in Addis Ababa during an 11-year period and noted a male to female ratio of 4:1. In 1968 Leister and Edemariam[5] reported an incidence of 2.5% of radiologically proven duodenal ulcers among 6,640 medical admissions to three major hospitals in Addis Ababa.

TABLE III *Postoperative complications*

EARLY COMPLICATION	PATIENTS	(%)
Pneumonia	7	8
Atelectasis	3	3
UTI	1	1
Upper GI Bleeding	1	1
Intractable vomiting	1	1
Wound dehiscence	1	1
Diarrhoea	2	2
Drug allergy	2	2
Scrotal irritation from Iodine	2	2
Fever only	1	1
TOTAL	21	23

There is, however, some interesting data on the sex ratio in different countries. Two Ethiopian studies give figures of M:F;4:1 and M:F;3:1[6,7]. Tovey in 1979[8] reported an incidence in Africa of 9.1:1 but with a range between 2.1:1 and 30:1. In India and Bangladesh, the incidence was M:F;16.1:1[9] and for the United Kingdom it was 2:1[10].

Thus the figure that I report from Eastern Ethiopia of 41 men to each woman is unusual and it is intriguing to think of possible causes. Two obvious factors which could be implicated are cigarette smoking and the chewing of Khat. This is a bush found in East Africa whose leaves contain Cathinone, a substance similar in structure and pharmacological activity to amphetamine. Halbach, in 1972 in a study from the Yemen, stated that oesophagitis and gastritis could follow the chewing of these leaves[11]. As only men enjoy these two pastimes in this part of Africa a relationship is certainly possible and should be further investigated.

Another point of interest is that the only two patients who developed postoperative diarrhoea were proved to be infected with *Entamoeba histolytica* and this complication was therefore not

a result of the truncal vagotomy. This well known complication had been found in 21% of the 725 patients reported by Mekuria[7]. Similar complications had been reported by Cox and Bond from Europe[12].

A 91% level of accurate diagnosis made purely on clinical grounds, without the benefit of either barium fluoroscopy or endoscopy and confirmed at operation, is encouraging for those who work in ill-equipped hospitals. This success rate is very different from the conclusions published in 1985 by Mengistu[13], who stated that only a 40% rate of detection of duodenal ulceration was possible by clinical means alone.

Conclusion

It appears that combining truncal vagotomy with gastrojejunostomy gives encouraging early results in peptic ulcer disease, certainly in the Somali part of Eastern Ethiopia.

It would also be very interesting to investigate further a possible causal relationship between cigarette smoking and Khat chewing with the development of this disease in this region of Ethiopia.

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References

1 Mengu RB. Stomach. In: Seymour I, Shwartz MD et al Eds. *Principles of surgery*, 3rd edn. USA McGraw Hill, 1979; 1133.
2 Way LW. Stomach and duodenum. In: Dunphy JE, Way LW eds. *Current Surgical Diagnosis and Treatment* 5th edn. California, Lange Medical Publications 1881: 414.
3 Grossman MI, Kurata JH, Rotter JI, Meyer JH, Rober A, Ricardson CT, Debas HT, Jensen DM. Peptic ulcer: new therapies, new disease *Ann Intern Med* 1981; 95:609-637.
4 Lester FT. Chronic non-infectious diseases of adults in Ethiopia. In: Kloos H, Zein AZ, eds *The Ecology of Health and Diseases in Ethiopia*. 2nd edn. USA West View Press Inc. 1993; 427.
5 Lester FT, Tsega W. The pattern of adult medical admissions in Ethiopia *East Afr Med J* 1976; 53:620-634.
6 Tsega E. Prospective analysis of 200 endoscopically proven cases of DU. *Ethiopian Med J* 1986; 24:113-122.
7 Mekuria T. Ulcer surgery in 725 Patients in Ethiopia *Ethiopian Med J* 1985; 23:75-79.
8 Tovey FI, Tunstall M. Duodenal ulcer in black populations in Africa south of the Sahara. *Gut* 1975; 16:564-576.
9 Tovey FI. Peptic ulcer in India and Bangladesh. *Gut* 1979; 20:329-347.
10 Wastell C. Stomach and duodenum. In: Mann CV, Russels RCG, Williams NS eds. *Bailey and Love's Short Practice of Surgery* 22nd edn. London, Chapman and Hall 1995; 677.
11 Helbach H. Medical aspect of Khat chewing. *WHO Bulletin* 1972; 47:25.
12 Cox AG, Bond MR. Bowel habits after vagotomy and gastroenterostomy. *Br Med J* 1964; 1:460-465.
13 Mengistu M. The diagnosis of duodenal ulcer and non-ulcer dyspepsia on the basis of Symptomatology. In: Tsega E ed. *Non Ulcer Dyspepsia* Addis Ababa, Ethiopia, The Research and Publication Office 1983; 19-20.