

# PEPTIC ULCERATION IN THE AFRICAN OF DURBAN

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It is generally considered that peptic ulcer is uncommon in the African, although Gelfand<sup>1</sup> suggests that it may be commoner in the urbanised Native.

Three cases of duodenal ulcer in male Africans were recently (April 1957) diagnosed during a single week in the medical wards of this hospital, and this unusual occurrence prompted an examination of the incidence of peptic ulcer in the African in Natal, and comparison of these findings with those recorded for the African elsewhere in this continent.

## *Material*

The admissions to the African medical and surgical wards (excluding orthopaedic wards) of King Edward VIII Hospital,

Durban, during the 2-year period June 1955—May 1957, have been analysed.

This hospital is the largest non-European hospital in Natal and serves mainly the non-European population of Durban and its environs. The smaller hospitals in Natal refer cases requiring major surgery and special radiological examinations to this centre and, in addition, many patients, by-passing their local hospitals, come of their own accord directly to this hospital for treatment. The majority of patients are derived from the Durban 'urban' population. An overwhelming majority of the Africans admitted are Zulus. Coloured patients do not attend at this hospital.

### Incidence

During the 2-year period June 1955—May 1957, 25,135 male and 14,500 female African patients were admitted to the hospital. They all entered the wards *via* the out-patient or casualty departments, where an average of 7,000 male and 4,000 female medical and surgical patients are seen monthly. Only 27 proved cases of gastro-duodenal ulceration were found among the available records of in-patients—an incidence of 0.068% (0.68 per 1,000). In all these cases the diagnosis was proved radiologically after a barium-meal, or at operation, or both, and in 3 cases at autopsy.

During the same period 9 cases were classified as 'doubtful'. In 7 of these, the duodenal cap was found radiologically after a barium-meal, to be irritable or deformed, but ulcer craters were not demonstrated. In the remaining 2, gastric lesions were displayed, but distinctions could not be made between neoplastic and benign ulcers. One of these last 2 patients refused laparotomy and was discharged; the case notes of the other cannot be traced, and so the final diagnosis remains uncertain.

In addition, 3 cases of lower oesophageal ulceration were found, each in association with a sliding hiatus hernia. Two proven and 2 doubtful cases of duodenal ulcer were also found in male African out-patients who were not subsequently admitted to the wards.

One patient was admitted for a recurrent duodenal ulcer but, as the diagnosis was originally established before June 1955, he has not been included in this series.

### Sex Incidence

Two duodenal ulcers were diagnosed in female patients—an incidence of 0.14 per 1,000 female admissions. The remaining 25 cases were all males, an incidence of 0.99 per 1,000 male admissions. The sex ratio in this series was therefore 12.5 males to 1 female. As the ratio of male to female admissions was 1.7 to 1, the corrected sex ratio was 7.4 males to 1 female. In addition to the above two cases, 2 cases of oesophageal ulcers, both associated with a hiatus hernia, were diagnosed in females.

### Age Incidence

Most of the patients seen at the hospital calculate their age by reference to some historical event. Ages quoted can therefore only be accepted as approximations, and in the older subjects may be a decade more or less than that given.

The youngest patient was a male aged 19 years (duodenal ulcer); the oldest a male aged 70 years (gastric ulcer). The 2 female patients were aged 24 and 29 years respectively. In Table I the age incidence, in decades, of the proven cases

TABLE I. AGE INCIDENCE OF PEPTIC ULCERS IN THIS SERIES COMPARED WITH RECORDS FOR EUROPEANS

Africans		Europeans	
Age Period	Present Series (1957)	Age Period	Erasmus's Series
10-19	1	Under 20	1
20-29	6	21-30	12
30-39	9	31-40	37
40-49	7	41-50	43
50-59	3	51-60	50
60-69	—	61-70	19
70-79	1	71-80	8
80-89	—	over 80	1
Total	27	Total	171

in this series, is compared with that found by Erasmus<sup>2</sup> in Europeans at Cape Town. It is seen that among the Africans of Durban the maximum incidence occurs at a significantly younger age than among Europeans in Cape Town. It should be remembered, however, that the life expectancy of the African is much shorter than that of the European,<sup>3</sup> and it is possible that the low incidence of peptic ulceration in the older age-groups among Africans, is merely a reflection of this shorter life expectancy.

### Site of Ulceration

Of the 27 proven ulcers, 22 were situated in the first part of the duodenum. The remaining 5 were situated on the lesser curvature of the stomach. One of these 5 was high up on the lesser curvature and the patient (a male aged 70 years) had, in addition, a sliding hiatus hernia. The radiological features in this case were those of a simple gastric ulcer; in 3 cases the ulcer was proved histologically to be benign; the remaining case (in a 25-year-old male) presented as an acute perforation and, at operation, there was nothing to suggest malignancy.

### Seasonal Incidence

The seasonal occurrence of cases in this small series was as follows:

	No. of Cases
Summer (November-January)	4
Autumn (February-April)	9
Winter (May-July)	8
Spring (August-October)	6

Thus, fewer patients with peptic ulcer were seen during the summer months than during the other seasons of the year, and the highest incidence was during the autumn and winter. No particular seasonal distribution was noted in the 5 patients who presented with acute perforations.

### Presenting Symptoms and Signs

5 cases (18.5%) presented as acute perforations; 3 of these were anterior duodenal ulcers and 1 an anterior gastric ulcer, in males. One perforated anterior duodenal ulcer was seen in a female. In only 2 of these cases was any preceding history of dyspepsia recorded.

Ten patients presented with haematemesis or melaena as the main symptom. Four were admitted after a severe haematemesis. In 2 of the latter, no previous history of dyspepsia was recorded; 1 patient gave a history of post-prandial epigastric pain of 1 month's duration before hospitalization, and 1 had had a previous severe haematemesis 1 year before admission. One 36-year-old male patient died as the result of a massive haematemesis while undergoing treatment for chronic malnutrition, the presence of a chronic duodenal ulcer (proved at autopsy) not having been suspected clinically. One patient had had repeated small haematemesis over a period of 2 months and another, who gave a past history of epigastric pain of 8 years duration, for which he had not previously sought medical advice, vomited 'a cupful of blood' 3 days before his attendance at the hospital.

In 3 cases the main symptom was melaena. One patient died shortly after admission from a severe gastro-intestinal haemorrhage; a 2-year history of 'constant upper abdominal pain with recent increase in severity' was recorded. The remaining 2 patients each presented with a story of having passed a melaena stool, and a past history of postprandial

pain, relieved by food, a duration of 1 month and 9 months respectively.

All the patients in whom bleeding occurred were males—9 from duodenal ulcers and 1 from a gastric ulcer.

The remaining 12 patients presented with histories suggestive, to varying degrees, of peptic ulcers. The recorded duration of symptoms varied from 5 days to 12 years. Case records were unfortunately incomplete, and a detailed analysis of symptomatology was therefore not undertaken.

#### DISCUSSION

##### *Comparative Incidence in Various Parts of Africa*

Perhaps because of the relative rarity of this disease in Africans, the incidence of peptic ulcer among these people has received little attention. Reference to the literature reveals no statistics for the African in Natal.

Beyers<sup>4</sup> was able to find only 4 cases (1 gastric ulcer and 3 duodenal ulcers, all in males) in 18,000 hospital inmates at the Johannesburg non-European Hospital during the years 1921-26.

Eagle and Gillman<sup>5</sup> in a series of autopsies at the Medico-Legal Mortuary, Johannesburg, found only 8 peptic ulcers in 8,328 cases necropsied, during a 10-year period, July 1928-August 1937, while 5 peptic ulcers (all in males) were found among 1,144 autopsies performed at the Johannesburg General Hospital, during the 9-year period 1927-35.

More recently, Charlewood and Frylinck<sup>6</sup> reported 94 cases of peptic ulcer in 103,618 admissions to the Johannesburg non-European teaching hospitals, during the years 1943-48 (an incidence of 0.09%), and 29 cases in 30,434 admissions to the Baragwanath Hospital for non-Europeans, Johannesburg, during 1948-49 (an incidence of 0.095%). The incidence among hospitalized Europeans between 1945 and 1949, reported by the same authors, was 1.3% (1,033 cases in 78,328 admissions to the Johannesburg General Hospital for Europeans. Unfortunately, the sex incidence was not recorded by these authors, nor was the site of ulceration or seasonal incidence stated.

Erasmus<sup>2</sup> (1955) in a series of 356 consecutive cases of gastro-duodenal ulceration and neoplasm, among all races, at Groote Schuur Hospital, Cape Town, found only 3 ulcers (all duodenal) in Bantu patients. The ratio of admissions of European and Coloured patients to Bantu was 9 to 1.

The incidence of peptic ulcer in the African in Natal, as found in this series (0.068%) is thus lower than that described for the Bantu of Johannesburg (0.09% and 0.095%). This incidence is significantly lower than that among Europeans in South Africa (1.3%), as well as that

recorded for the Africans of Nigeria, among whom Joly<sup>7</sup> recorded an incidence of 4.6% in 2,543 patients admitted to Adeoyo Hospital, Ibadan, during 1950-53.

##### *Sex Incidence*

The few statistics available on the incidence of peptic ulcers in the African indicate that the condition is extremely rare in females. Thus neither Beyers<sup>4</sup> nor Erasmus<sup>2</sup> encountered a single female case; Eagle and Gillman<sup>5</sup> quoted a male to female ratio of 2 to 1 (based on a post-mortem series of 8 cases). Ellis<sup>8</sup> in the Natives of Nigeria, found 12 duodenal ulcers among females in 124 cases, a male to female ratio of 9.3 to 1. Ellis's figures agree with those of Aitken<sup>9</sup> who in 1933, also from Nigeria, reported 4 female cases in 48. Joly,<sup>7</sup> at Ibadan, Nigeria, found 26.7% of 116 cases of duodenal ulcer to occur in females, a male to female ratio of 3.7 to 1. The sex ratios calculated on the latter 3 authors' figures do not take into account the relative sex distribution of the total number of hospital admissions among whom the peptic ulcers were diagnosed.

The sex difference in the present series (12.5 males to 1 female) would appear to confirm the impression that peptic ulceration is extremely rare in the African female. However, if, as previously indicated, corrections are made for the discrepancy between the number of male and female patients admitted to this hospital, the sex ratio then becomes 7.4 males to 1 female, an incidence among females lower than that described in Africans by Eagle and Gillman<sup>5</sup> and Joly,<sup>7</sup> and higher than that described by Ellis<sup>8</sup> and Aitken.<sup>9</sup>

##### *Location of Peptic Ulcers*

Five gastric ulcers were diagnosed in the present series (18.5%)—a ratio of 1 gastric to 4.4 duodenal. Beyers<sup>4</sup> found 1 gastric ulcer in 4 African patients with peptic ulcers. Erasmus<sup>2</sup> did not find any gastric ulcers in Africans in his series of 356 consecutive cases of gastro-duodenal ulceration and neoplasm, among all races, at Groote Schuur Hospital, Cape Town. In Nigerian natives, Joly<sup>7</sup> (116 cases) and Konstam<sup>10</sup> (20 cases) failed to detect a single instance of gastric ulcer, all patients studied by them being diagnosed as suffering from duodenal ulcer; Ellis<sup>8</sup> found only 1 gastric ulcer among 128 African cases. Table III compares the above figures in Africans with those of Jones and Pollak<sup>11</sup> and Jamieson, Smith and Scott<sup>12</sup> for Europeans in Great Britain, and of Joly<sup>7</sup> for Negro patients in New Orleans and Chicago.

Thus, excluding Beyers' small series,<sup>4</sup> gastric ulcers were found more frequently in this series of African cases, than has previously been reported in Africans by others.

TABLE II. COMPARISON OF FREQUENCIES OF DUODENAL AND GASTRIC ULCERS, AND SEX INCIDENCE OF ALL ULCERS

Author	Race	Place	Date	Site of Ulcer			Sex Ratio M/F	
				Gastric	Duodenal	Ratio G/D		
Present Series	..	African	Durban	1957	5	22	1/4.4	12.5/1
Beyers	..	African	Johannesburg	1927	1	3	1/3	4/0
Ellis	..	African	Nigeria	1948	1	123	1/123	9.3/1
Joly	..	African	Nigeria	1956	0	116	—	2.7/1
Konstam	..	African	Nigeria	1954	0	20	—	3/1
Jones and Pollak	..	European	London	1945	271	623	1/2.5	4.7/1
Jamieson, Smith and Scott	..	European	Glasgow	1949	358	2,763	1/7.7	3.5/1
Joly	..	Coloured	New Orleans	1956	278	718	1/2.6	—
Joly	..	Coloured	Chicago	1956	22	170	1/7.7	—

### Presenting Features: Problems of Diagnosis

The high percentage (55.5%) of patients in this series, presenting with one or other complication of peptic ulceration, was unusual. Beyers<sup>4</sup> recorded 1 perforated gastric ulcer among his 4 cases. Eagle and Gillman<sup>5</sup> recorded 2 duodenal perforations in their post-mortem series of 8 cases. Joly<sup>7</sup> saw 2 duodenal perforations and 1 case of haematemesis in 116 cases in Nigeria. Of Ellis's 123 cases of duodenal ulcer, 3 presented as acute perforations and only 3 patients reported having vomited blood.<sup>8</sup> Perforation in the African in Southern Rhodesia is apparently uncommon, judging from Frazer Ross's report of a single case of perforated duodenal ulcer which occurred in an African female in his area.<sup>13</sup>

There are many factors, probably responsible each to a varying degree, for the high complication rate seen in patients at this hospital. Because the hospital is overcrowded only the more urgent cases are usually admitted. Thus, many patients complaining of epigastric pain are of necessity treated empirically as out-patients, without full investigation. The pain caused by an uncomplicated peptic ulcer may be temporarily relieved, but the ulcer is not 'cured'. The majority of such patients will eventually return to this hospital, either because of recurrence of the same symptoms or because of one or other complication which might, in the interim, ensue.

The clinical diagnosis of peptic ulcer depends essentially upon an accurate history and this is difficult to obtain, through an interpreter, from our African patients, most of whom do not speak English. This difficulty is still greater in the overcrowded out-patient department of this hospital. An inaccurate history, especially in this Natal hospital where amoebic liver abscesses are so commonly seen, undoubtedly has the result that some patients with peptic ulcers, presenting with abdominal pain alone, are diagnosed as suffering from amoebic liver abscess and are treated for that condition. Thus, of the 12 patients in this series (ultimately proved to be suffering from peptic ulcer), who presented with epigastric pain but without symptoms of any complication, 7 had in fact been given a full course of anti-amoebic therapy before the correct diagnosis was established. Four of these patients had received more than one course of anti-amoebic therapy. In one of them, before the correct diagnosis of duodenal ulcer was established he had been admitted on 5 different occasions, and on each occasion had received a full course of anti-amoebic therapy. In none of the above patients was there any record that *E. histolytica* had been isolated from the stool, and if the criteria for the diagnosis of amoebic liver abscess, as advanced by Lamont,<sup>14</sup> are carefully applied no patient in this series can be considered to have suffered from amoebic liver abscess.

The cultural background of the Zulu, to which race most of our patients belong, is such as to encourage an element of stoicism from an early age. It is conceivable, therefore, that the pain threshold of many of our patients may be higher than in his European counterpart. This may be responsible, at least in part, for delay in seeking medical advice and hence a greater likelihood of complications supervening. Thus, 12 patients in this series gave a history of epigastric pain of 2 years' duration or longer; 5 of these patients presented with one or other complication of peptic ulceration.

### Some aspects of aetiology in the Durban African

Both the aetiology and pathogenesis of peptic ulcers have been discussed at great length in the literature<sup>15,16,17</sup> and many factors are known or thought to play a part. To give preference to any single aetiological factor from the findings in the present small series is obviously not justifiable. However, several observations in 4 patients that I was personally able to interview and examine strongly support the possibility that, at least in these 4 subjects, psychosomatic factors<sup>15,18</sup> were of considerable importance in the aetiology of their duodenal ulcers. This seems to be indicated by the histories elicited from them, here briefly recorded.

#### CASE RECORDS

##### Case 1

An intelligent, married, 29-year-old, English-speaking African male, who had passed standard VII at the age of 17 years, was admitted complaining of postprandial epigastric pain, relieved by food, present without remission for 8 months. Before admission he had been given 2 full courses of anti-amoebic therapy, with no relief of symptoms. Barium-meal examination at this stage revealed no abnormality, but he responded to an 'ulcer regime' and so he was discharged with a provisional diagnosis of duodenal ulcer. He was readmitted 10 weeks later with a history of recurrence of pain (he had stopped taking alkalis) and 3 attacks of fainting during the preceding 3 weeks, each attack being followed a few hours later by the passage of a melaena stool. Repeat barium-meal examination revealed a duodenal ulcer.

*Social History.* He has been a storeman at a radio shop for 9 months, and is solely responsible for several thousand pounds' worth of stores and equipment. He admitted that the responsibility worries him considerably. His symptoms first appeared a few weeks after he commenced this job. Earns £15 per month.

##### Case 2

An intelligent, single, 24-year-old English-speaking African male. Complained of acute continuous burning epigastric pain for the past 6 days, and postprandial vomiting for 3 days. No previous history of any apparent relevance. Barium-meal examination revealed a large duodenal ulcer at the base of the duodenal cap.

*Social History.* Constable in South African police force for 8 years. Earns £21 per month. Passed standard V at the age of 16 years. This patient seemed particularly introspective, apprehensive, and anxious to leave hospital. He was discharged after 3 weeks' hospitalization because it was felt that confinement was doing more harm than good.

##### Case 3

An intelligent, unmarried, 40-year-old African male. Three days before admission he vomited a cupful of blood, and then fainted. For 2 days after this he noticed that his stools were 'pitch black'. There was no associated abdominal pain. He had been experiencing burning epigastric pain, unrelated to meals, for 8 years. The pain sometimes occurred at night. Barium-meal examination revealed a duodenal ulcer.

*Social History.* Able to read and write English but had never been to school. Domestic worker earning £6 10s. 0d. per month, plus board and lodging. His employer, a doctor, stated that he was an intelligent, extremely conscientious man, and had recently been worrying a great deal about a young nephew, whom he was fostering and who had recently started mixing with 'bad company'. The patient readily admitted this and persisted in asking to be discharged so that he could return to his home to care for the boy.

##### Case 4

A 46-year-old Zulu-speaking African male. Admitted for resuscitation after a massive haematemesis. He had been treated for a similar episode 1 year before at another hospital. Following the first episode of haematemesis he began to experience a burning epigastric pain, not related to food but which was relieved only by self-induced vomiting. A barium-meal examination revealed a duodenal ulcer.

**Social History.** Unable to speak English and had had no schooling. Head policeman at an African male compound on the Natal South Coast, and solely responsible for maintaining order among the 100-odd inmates. Earns £4 per month plus board and lodging. Denied any possible cause for worry or anxiety but was nevertheless anxious to be discharged and return to work. His employer stated that he was a reliable and conscientious man and that, in his opinion, the post was a very responsible one.

Thus, 3 of these 4 patients spoke English and were to some degree educated. All 4 were interested in their illness and were anxious to be discharged as soon as possible so that they could return to work. This is in marked contrast to the majority of the patients in this hospital, who speak only Zulu, have had no schooling at all, seem to be rather uninterested in their illnesses, and are usually prepared to remain in hospital for as long as the medical authorities deem necessary.

In only 2 of these 4 patients (cases 1 and 3) could an obvious cause for anxiety be detected. All 4 patients earned what is, in comparison with the average patient seen at this hospital, a 'high' wage. The majority of male patients seen at this hospital earn less than £5 per month and also have to find and pay for their own lodgings and provide their own food.

Neither Konstem<sup>10</sup> nor Ellis<sup>8</sup> considered psychosomatic factors to be of aetiological significance in any of their patients in Nigeria, but favoured some dietary deficiency. I am unable to quote any data for or against their theory, as applied to the South African Bantu, but the fact that the Bantu in South Africa far more commonly suffers from frank or sub-clinical malnutrition than the European, together with the much higher incidence of peptic ulcer in the latter,<sup>6</sup> would argue against any specific dietary deficiency as playing a major aetiological role in the production of peptic ulcers in the South African Bantu.

How large a part psychosomatic factors play in the aetiology of peptic ulcer in the African in Durban is impossible to assess until a larger series of cases is recorded. Investigation into the degree of so-called 'westernization' of Africans in the Union who are found to be suffering from peptic ulceration should have an interesting bearing on the aetiology of gastric and duodenal ulcers. In particular, their type of employment, income, dietary habits, and some objective assessment of personality type and similar information about a possible 'African ulcer diathesis', should be considered. The incompleteness of the records in the present series precludes such an analysis.

#### SUMMARY

1. The incidence of peptic ulceration in the African in Natal (0.68 per 1,000) as reflected in the analysis of 39,635

admissions to King Edward VIII Hospital, Durban, during the 2-year period June 1955 to May 1957, is recorded and compared with other available figures for Africans in other parts of this continent.

2. The younger age incidence of this lesion among Africans as compared with the European, is noted.

3. The sex distribution of cases (12.5 males to 1 female) and the high complication rate (55.5%) in the present series of 27 proven cases is recorded and discussed. In the light of the frequency of incorrect diagnosis among cases in the present series the importance is stressed of considering peptic ulcer in the differential diagnosis of amoebic liver abscess, especially in Natal.

4. The possible part played by psychosomatic factors in the aetiology of peptic ulcer in the African is discussed; the case histories of 4 patients are quoted in support of this possibility.

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