

Ruptured Peptic Ulcer*

A Review of 69 Cases at Freedmen's Hospital

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INTRODUCTION

THIS paper continues reports on peptic ulcer published elsewhere.¹ The initial study recorded observations on the influence of alcohol and some salicyl compounds on the natural history of peptic ulcer disease.¹ Although reference was made to uncomplicated ulcer and perforation, the report was concerned primarily with massive hemorrhage. The present study, confined to free perforation, appears justified since diagnostic difficulties exist and some etiologic factors are obscure.

MATERIALS AND METHODS

Patients with free perforation were searched for in the records of the hospital's library, Department of Pathology and Operating Room. All were Negroes admitted to Freedmen's Hospital between January, 1946 and December, 1963. Only patients with proven transmural lesions were accepted. Autopsy or surgery was performed on all. Sixty-nine records were found suitable for study. No attempt was made to study relative incidence of peptic ulcer or its complications.

OBSERVATIONS

In 36 of 69 cases, the patient was admitted with a diagnosis of ruptured peptic ulcer. The remaining 33 entered the hospital under 13 different diagnoses. Six were admitted as appendicitis. Acute abdomen, pancreatitis, ruptured viscus and gastrointestinal hemorrhage each appeared on four different admissions.

Fifty-one patients were between 30 and 59 years of age. One perforated below 12 years of age and another above 70 years of age (Table 2). Fourteen were between 12 and 29 years of age. Fifty-five

TABLE 1. ADMITTING DIAGNOSES

Diagnoses	Number of Patients
1. Appendicitis	6
2. Acute Abdomen	4
3. Pancreatitis	4
4. Ruptured Viscus	4
5. G. I. Hemorrhage	4
6. Intestinal Obstruction	2
7. Pelvic Peritonitis	2
8. Peritonitis	2
9. Acute Cholecystitis	1
10. Pelvic Abscess	1
11. Pneumonia	1
12. Undetermined	1
13. Ruptured Ectopic Pregnancy	1
14. Peptic Ulcer (Total)	40
Gastric Ulcer	1
Peptic Ulcer	1
Perforating Duodenal Ulcer	7
Ruptured or Perforated Duodenal Ulcer	31

Admitting diagnoses exceeded 69 in number since more than one diagnosis appeared in some patients admission.

were males. Only 15 had never married. Nine were separated, 38 were married, one divorced and 6 widowed.

Although the rate of perforation increases in the fall, it reaches its peak in winter and remains at a constant high rate through spring.

In 58, the initial complaint was abdominal pain. Anorexia, nausea, and vomiting occurred from the beginning in 12.

The chief complaint in 58 of 69 patients was pain. Nausea and vomiting in twelve patients were serious clinical problems.

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TABLE 2. AGE INCIDENCE

Age	Number
Up to 12 years	1 (1.45%)
12 to 30 years	14 (20.2%)
30 to 39 years	22 (32.0%)
40 to 49 years	17 (24.6%)
50 to 59 years	12 (17.4%)
60 to 69 years	2 (2.9%)
70 - above	1 (1.45%)
<i>Total</i>	<i>69 (100%)</i>

Within 24 hours of the onset of illness, 55 patients were taken to surgery. Operation was performed on 22 within six hours and in another 22 within 12 hours.

Some reference to pneumoperitoneum was found in 60 cases. In eight, no air could be seen. Five of the eight without air under the diaphragm, were gastric ulcers. In one third of the gastric ulcers, no air under the diaphragm was found.

Diagnosis was established in less than six hours, in 34 cases and in another 16 cases within 12 hours. At the end of 24 hours a correct diagnosis had been established in 55 of 69 cases.

Ulcerogenic agents, (salicyl compounds in 21, alcohol in 40, tobacco in 39, other agents, in 19) were involved. Multiple agents were taken by 42 patients.

Twenty-five patients were on an ulcer regimen. Ten showed evidence of liver disease, 19 had previous surgery for ulcer disease and 16 had bled previously. Six of the patients who had had simple closure had sub-total gastrectomy subsequently. Previous operations other than those for ulcer were performed in 22 instances.

Eighty-five additional diagnoses were made: Hypertensive cardiovascular disease occurred in six,

TABLE 3. SEASONAL OCCURRENCE

Season	No. of Patients
Summer	6 (8.8%)
Fall	14 (20.2%)
Winter	24 (34.8%)
Spring	25 (36.2%)
<i>Total</i>	<i>69 (100%)</i>

TABLE 4. INITIAL COMPLAINT

Initial Complaint	No. of Patients
1. Abdominal pain	58
2. Anorexia, Nausea and Vomiting	12
3. G. I. Bleeding	2
4. Dyspepsia	2
5. Epigastric soreness	1
6. Hematemesis	1
7. Fullness	1
8. Syncope	1

Some patients had more than one initial complaint.

appendicitis in seven, pneumonitis in five, herniae in four, diabetes mellitus in three, pancreatitis in three, benign hypertrophy of the prostate in three, syphilis in three, and gonorrhoea in four. Twenty patients had no other complaints or diagnoses.

Sixty patients appeared acutely ill. The abdomen had a board-like rigidity in 42. Peristalsis could not be heard in 34 and liver dullness was obliterated in 24. Rectal tenderness was present in 21 and definitely absent in 43 cases.

Blood pressure was below 90mm Hg in 4, between 112-140mm Hg in 36, and above 142mm Hg in 18. The pulse rate varied from 70 to more than 120/min. in 40.

The leucocyte count was below 5000 in 5, and above 12,000 in 31. It was within normal limits in 36. Although the BUN was above normal in 19, it was normal in 39. Amylase and or lipase were measured in only 13 of 69 patients. In most instances normal values were found. In no patient was it markedly elevated or reduced.

TABLE 5. HOURS FROM ONSET OF SYMPTOMS TO SURGERY OR DEATH

Time Lapse	No. of Patients
Less than 6 hours	22 (32.0%)
6-12 hours	22 (32.0%)
13-24 hours	11 (15.9%)
25-48 hours	3 (4.35%)
49-72 hours	1 (1.45%)
More than 72 hours	8 (11.6%)
Unknown	2 (2.9%)
<i>Total</i>	<i>69 (100%)</i>

TABLE 6. TIME FOR ESTABLISHED DIAGNOSIS

<i>Time Lapse</i>	<i>No. of Patients</i>
Less than 6 hours	34 (49.3%)
6-12 hours	16 (23.2%)
13-24 hours	5 (7.24%)
25-48 hours	2 (2.90%)
49-72 hours	0 (0%)
Above 72 hours	3 (4.34%)
Unknown	9 (13.02%)
<i>Total</i>	69 (100%)

In 26 the blood type was O+, 12 were A+, 7 were B+, and 2 AB+, in 21 no blood type was recorded and one was Rh—.

Perforation resulted in death in eight of 69 patients (11.6%). Three deaths occurred in the 5th decade, two in the 4th decade, and one each in the 3rd, 6th and 8th decades. The youngest patient to perish died 48 hours after closure of a gastric ulcer which had perforated 17 hours before surgery. Four of the deaths occurred with perforated gastric ulcers. Five were male and three were females. Three died in shock, one had liver disease, one had hypertensive cardiovascular disease, one massive gastric hemorrhage, and one multiple ulcers associated with Serpasil medication.

In 54 patients, the ulcer was found in the duodenum, on the anterior surface in 39. In eight of the 15 gastric ulcers, the ulcer was also on the anterior surface. Simple closure, except under very special conditions, was the operation of choice.³

TABLE 7. ULCEROGENIC AGENTS

<i>Ulcerogenic Agents</i>	<i>No. of Patients</i>
1. Multiple Agents	42
2. Alcohol	40
3. Tobacco	39
4. Salicyl compounds	21
5. Upper Respiratory Infections	6
6. Insulin	4
7. Reserpine compounds	2
8. Steroids	2
9. Mechanical factors	4
10. No demonstrable agent	5
11. Not stated	7

TABLE 8. PREVIOUS SURGERY

<i>Surgery</i>	<i>No. of Patients</i>
1. Appendectomy	10
2. Herniorrhaphies	3
3. Perforated Peptic Ulcer	2
4. Lobectomy	2
5. Subtotal gastrectomy	1
6. Lysis of adhesions	1
7. Hemorrhoidectomy	1
8. Epididymectomy	1
9. Myomectomy	1
<i>Total Number of Patients with Previous Surgery</i>	22

DISCUSSION

A truly accurate diagnosis on admission was made on 36 (52 per cent) of our series of patients admitted to the hospital with free perforation complicating peptic ulcer disease. No single factor appears responsible for this lack of early diagnosis. However, after admission to the hospital, pneumoperitoneum was mentioned in 60 cases (86.9 per cent). A pre-operative diagnosis of ruptured peptic ulcer after a hospital conducted medical survey was supported then in 86.9 per cent of these patients. In 9 of 69 cases, air under the diaphragm was either absent or not mentioned. Welch teaches that it is seen in 40 per cent of the patients 6 hours after perforation.² Kingsbury, H. A. et al found air under the diaphragm in 70 per cent of 170 patients.³ Eighty per cent of these patients had been operated on within six hours. Soares demonstrated air in 80 per cent of his series.⁴

TABLE 9. ADDITIONAL DIAGNOSES

<i>Additional Diagnosis</i>	<i>No. of Patients</i>
Appendicitis	7
Hypertensive Cardiovascular Disease	6
Pneumonitis	5
Gonorrhoea	4
Herniae	4
Pancreatitis	3
Diabetes Mellitus	3
Syphilis	3
Benign Prostatic Hypertrophy	3
Diverticulosis coli	1
No other diagnosis nor complaint	20

TABLE 10. PHYSICAL EXAMINATION

<i>Physical Findings</i>	<i>Not</i>		
	<i>Present</i>	<i>Absent</i>	<i>Mentioned</i>
Acutely Ill	60	8	1
Abdominal Board-like			
Rigidity	42	24	3
Obliteration of Liver Dullness	24	32	13
Silent Abdomen	34	23	12
Rectal Tenderness and or			
Bulging	21	43	5
Dry Skin	12	8	49
Wet Skin	7	13	49

The initial complaint in 58 patients and the chief complaint in 68 of 69 patients was abdominal pain. In most it was described as crampy. Why it should be described as crampy by so many, is obscure. Nausea and vomiting seldom present a serious problem. Where ruptured ulcer was suspected, pneumoperitoneum by x-ray was a very dependable observation except in gastric ulcer where five of eight patients failed to show air under the diaphragm. In a patient who has a history of ulcer disease, crampy pain, board-like silent abdomen, and no air under the diaphragm a suspicion of gastric ulcer appears justified. Henelt, et al⁵ have reported that in some patients with perforation injection of air (pneumogastrography) show air in previously negative x-rays where suspected diagnosis can be then established in a great majority of cases within 6-12 hours.

The disease occurs here with greater frequency in the winter and spring. These findings are in agreement with the conclusions of Ahmed, et al.⁶ In France, summer and winter show the highest peaks.⁷ It is more than likely to be found in a man married yet often separated and relatively free from other diseases. Occasionally, however, he has had previous surgery for troublesome ulcer, appendicitis or a bout of gastrointestinal bleeding. In 40 (57.9 per cent) patients there was a history of ulcer or its complications. Half of these had previous surgery 19 (27.5 per cent). He appears to have no constitutional peculiarities, does not appear prone to any particular diseases and has blood types distributed between O+, A+ and B+ types.

In man there is a relationship between duodenal

TABLE 11. BLOOD TYPES*

<i>Blood Type</i>	<i>No. of Patients</i>
O+	26
O—	1
A+	12
A—	0
B+	7
B—	0
AB+	2

* Blood types were only recorded in 48 cases, and not available in the remaining 21 cases.

ulcer and the pair of allelomorphs determining the presence or absence of the ABH antigens in the saliva and other watery secretions, nonsecretors having a higher incidence of ulceration than secretors. No association between ulcer and quantity of antigen in the saliva was detected by Clarke et al.⁸

At first glance ulcerogenic agents appear less important in patients with perforation since in only 21, was there a history of salicyl compounds ingestion and other agents in 19. Alcohol, however, played a more prominent part being ingested in 40, with tobacco likewise prominent in 39. Brown and Mitchell in personally conducted interviews found salicyl compound and/or alcohol regularly involved in perforation. High incidence of salicyl compounds and alcohol ingestion were reported in ten patients with free perforation.¹ The emergency or urgency felt in perforation discourages routine search for ulcerogenic agents.

Routine laboratory tests show such wide variation, they are of little help in arriving at a definite diagnosis. The amylase molecule is quite large. Its level rises in situations which allow its escape from pancreatic cells. Extremely high levels can occur in perforated peptic ulcer and mesenteric vascular occlusion.⁹

Kozoll and Meyer in an excellent study of 1904 patients made the observation that the acuteness of the illness allowed little elaborate laboratory studies in patients with perforated ulcer. Normally there was only opportunity for routine urinalysis, hemogram, and appropriate roentgenograms. However, results of laboratory tests may reflect accurately important prognostic implications. Disturbed

renal function influenced prognosis unfavorably. Certain serum electrolytes particularly, reduced serum chloride and reduced serum potassium, may presage an ominous outcome.¹⁰

Apparently not even an ulcer regimen will protect against perforation since in 25 out of 69 patients an ulcer program was in effect. At perforation various physiologic factors are operating. Erosive acid-pepsin and changing intraluminal pressures are among the important forces.

If a diagnosis of ruptured peptic ulcer is to be arrived at in the earliest possible time, emphasis must be placed on a history of ulcer disease in an acutely ill male who has a board-like silent abdomen. It is of interest that the board-like quality of the abdomen believed by many to be due to intra-abdominal acid peritoneal fluid is quite unlikely since all but one of 59 patients studied by Howard et al. had alkaline peritoneal fluid.¹²

CONCLUSIONS

1. The records of 69 patients admitted to Freedmen's Hospital between January, 1946 and December, 1963 with free perforation were studied.
2. Since diagnosis is sometimes difficult, it was discussed.
3. Known ulcerogenic materials may influence adversely the natural history of peptic ulcer despite a medical program.
4. Differences some of which are constitutional and/or environmental exist in some patients with perforation when compared to others with simple uncomplicated ulcer disease or hemorrhage.
5. Material, pertinent to the subject from the recent literature, was included.

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