ACUTE PANCREATITIS: A CLINICAL SURVEY

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WHEN pancreatitis was first described, it was considered to be a fulminating inflammatory process which was inevitably fatal (Fitz, 1889). This view underwent little change over the years, and as recently as 1963 Zachary Cope stated that acute pancreatitis was a condition marked by a sudden onset, with excruciating pain and profound shock (Cope, 1963). Though Opie described the frequent association with gall-stones in 1901, the disease has been considered to be one of the less common causes of abdominal pain (Opie, 1901).

Recent reports necessitate a considerable change of outlook on the clinical aspect and manifestations of this disease (Fallis, 1953; Fogerson and Shedd, 1955; Bergman, Dunn and Strahley, 1961; Albo, Silen and Goldman, 1963). The present study is an analysis of the age and sex distribution, clinical, laboratory and X-ray findings in 115 patients with acute pancreatitis treated at the Massachusetts General Hospital over a four year period. The criteria for inclusion in the series were: (1) A finding of pancreatitis at operation or autopsy, or (2) Clinical and biochemical evidence of pancreatitis.

Results

The age and sex distribution are shown in Fig. 1.

Mode of presentation—Abdominal pain was the main symptom in all but one of the cases, and it was located primarily in the upper abdomen or interscapular region.

Left sided pain occurred in 14.8 per cent of the patients.

In two cases the initial complaint was of pain in the lower abdomen or umbilical region, and in them pancreatitis was not suspected at first. In one, an abscess developed in the left flank and required drainage: she had been thought to have diverticulitis. The second was thought to have intestinal obstruction, due to a lesion of

the large bowel; barium enema was normal, but laparotomy revealed an oedematous pancreas.

Although the onset of the pain could be described as acute, frequently it took several hours to reach its maximal intensity, unlike perforated peptic ulcer. Distinction from biliary colic and cholecystitis by the description of the pain was often impossible. The sites of occurrence of pain are shown in Fig. 2.

Previous history—In 58 of the 115 patients there was a past history of dyspepsia, which was related to food in 25 patients.

A documented history of gall-stones was present in 17 cases, and 17 patients had had previous biliary operations.

Only seven were known to have had attacks of pancreatitis before.

Alcoholism was more prevalent among the male patients. Of the 32 men in whom any details of alcohol consumption are recorded, 20 had a heavy intake.

Factors affecting the onset—In only 45 per cent of the patients was the onset closely related to eating and drinking, and in 30 per cent there did not appear to be any specific factor related.

Of the 14 traumatic cases, 11 followed operations in the pancreatic area, and are summarised in Table 1. Figures are not available to show the incidence of pancreatitis among patients undergoing similar operations during that period. One case followed a compression injury to the abdomen, and two are considered to have followed "stress". A woman of 80 underwent a radical vulvectomy, and later a skin-graft; following the second procedure she collapsed and died: post-mortem revealed acute pancreatitis. The second case occurred in a man of 79 who had been extensively burned; later he developed severe abdominal pain, jaundice and a raised serum amylase; no operation was required and he gradually recovered. In three patients a period of hospitalization for unrelated conditions preceded the attack.

FIG. 1.—Age and sex distribution.

FIG. 2.—Site of pain—number of patients are shown in the circles.

Clinical findings (Fig. 3)—We would draw attention to the high incidence of fever and the low incidence of shock or hypotension.

Tenderness, like pain, was often present over a wide area. The sites of maximal tenderness are shown in Fig. 4.

Bowel sounds were absent at the initial examination in only 23 of the 81 cases in whom the sign was recorded. This is in contrast to perforated peptic ulcer, where they are absent in a much higher proportion. However, it is in the more severe cases of pancreatitis that the bowel sounds disappear and the abdomen becomes rigid, making the distinction from perforated ulcer more difficult.

Laboratory findings (Table 2)—Among the nine patients in whom no amylase estimation was made, eight had the diagnosis proved by either operation, X-ray examination or post-mortem. In the case of one woman the history was very suggestive of pancreatitis, and she was known to have gall-stones; we therefore considered that she was suffering from pancreatitis.

Among the 11 patients with normal amylase values, five had the diagnosis confirmed by operation, X-ray or post-mortem; six had clinical histories and findings of pancreatitis, and one of these also had diabetes meliitus.

A white cell count of more than 10,000 cells/cu.mm. was commonly found early in the

TABLE 1
SUMMARY OF CASES DEVELOPING POST-OPERATIVE PANCREATITIS.

Operation performed	Emergency or "cold"	Age	Time of onset	Outcome
Exploration of common bile duct: obstructive jaundice.	Emergency	80	Operation + 1 day	Died
Exploration of CBD: gall-stones.	Cold	67	Operation + 2 days	Died
Exploration of CBD: recurrent jaundice.	Cold	22	Operation + 2 days	Died
Exploration of CBD: gall-stones and jaundice.	Cold	54	Operation + 1 day	Died
Gastrectomy for duodenal ulcer.	Emergency	62	Operation + 5 days	Died
Gastrectomy for duodenal ulcer.	Cold	43	Operation + 2 days	Died
Gastrectomy for duodenal ulcer.	Cold	29	Operation + 1 day	Died
Gastrectomy for carcinoma.	Cold	57	Operation + 1 day	Died
Gastrectomy for carcinoma.	Cold	73	Operation + 1 day	Recovered
Gastrectomy for carcinoma.	Cold	60	Operation + 1 day	Died
Excision of Islet cell tumour of the pancreas.	Cold	68	Operation + 1 day	Died

FIG. 3.—Clinical findings.

disease. The highest count recorded was 32,000, while the average was 16,700. Fifteen counts were normal, and 16 patients did not have the test done.

Radiological findings—A plain X-ray of the abdomen was performed during the first 48 hours of the disease in 61 patients. Calcification was seen in the pancreatic region in one man

and one woman only. The man was a chronic alcoholic, and the woman had a carcinoma of the parathyroid gland with hyperparathyroidism. The "sentinel loop" referred to by several authors was not seen in any of our patients. We consider that a plain X-ray of the abdomen is not of very great value in making a positive diagnosis of acute pancreatitis, though it may be

FIG. 4.—Site of tenderness—number of patients are shown in the circles.

of great value in excluding other acute abdominal conditions.

Mortality—Of the 115 patients, 27 died during the acute attack or of its complications while they were still in the hospital; this gives a mortality of 23.4 per cent. Ten of these patients died from pancreatitis which followed operations in the pancreatic area. The single man who survived his attack of pancreatitis had had a carcinoma of the stomach removed; he was known to be alive and well 10 years later. Of the remaining 17 patients dying, five had undergone surgery before death: one for diagnosis, and the other four for drainage of the biliary system or of pancreatic abscesses; it is not considered that the operation accelerated death in any way. Twelve other patients underwent surgery in the acute phase of the attack, either for drainage of abscesses or removal of gall-stones, and they recovered. Therefore, of 17 patients who were operated upon for the acute attack, five died (29.4 per cent).

Thirteen of the 27 patients dying were between the ages 60 to 79. But four patients were between 20 and 29; two of these followed opera-

TABLE 2 LABORATORY FINDINGS.			
	Male	Female	Total
Serum amylase raised	42	53	95
normal	7	4	11
unknown	4	5	9
Serum lipase raised	14	18	32
normal	4	4	8
Serum bilirubin raised	18	25	43
normal	7	12	19
Blood sugar raised	15	18	33
normal	0	3	3
Glycosuria on admission	4	9	13
Serum calcium raised	1	2	3
normal	16	20	36
lowered	1	4	5
unknown	33	34	67

Amylase estimations are given in "Russell Units" (Huggins, C., Russell, P. S., 1948). Normal values for our laboratory are 4-25 units.

tions, one was an alcoholic, and the fourth was a woman with gall-stones who died in spite of drainage of the biliary system.

The immediate causes of death were not clear in the records, but it appeared that the presence of shock and Grey-Turner's or Cullen's signs carried a poor prognosis. A fulminating condition accounted for the deaths of three women, but all the other patients survived for several days, usually six or seven, though one or two patients lived up to three weeks.

Complications—Diabetes was discovered in 10 patients after the acute attack: a blood sugar estimation had not always been done in the acute phase, but there had been no glycosuria in any of these patients on admission, and therefore the condition probably developed as a result of the pancreatitis.

Five patients developed pseudo-cysts, and two developed fistulae following an operation. As some of the patients were never seen at the hospital after discharge, this is probably not a true picture of the late results. All the cysts were operated upon, and drained either into the stomach or into the jejunum: all did well. One of the fistulae closed spontaneously after three months, and the other was drained successfully into the jejunum.

Discussion

Our findings agree for the most part with those of other recent reports, but differ widely from the classical concept of acute pancreatitis (Cope, 1963). Regarding age and sex distribution, females comprised 54 per cent of the series, and over half the patients were under 60 years of age. There is a steady increase in incidence up to the seventh decade, the oldest

patients being a man of 94 (Fogerson and Shedd, 1955; Albo and others, 1963; Howard and Ehrlich, 1963). Fifteen cases of acute pancreatitis in childhood have been treated recently at the Massachusetts General Hospital, so the young are by no means immune (Hendren, Greep and Patton, 1965).

The most significant fact that emerges from this survey is the variability in the clinical presentation. Fogerson and Shedd (1955) stated that the pain was invariably epigastric, whereas this was so in only 63 per cent of our patients. A small number complained of pain in the right or left hypochondrium as an isolated symptom. Left-sided pain, said to be typical of pancreatitis (Warren and Cattell, 1959; Cope, 1963), occurred in only 15 per cent. Interscapular pain was present in 43 per cent, which agrees with Albo and others (1963).

A history of dyspepsia was a common finding in these patients, and we consider that pancreatitis is an important differential diagnosis in patients in whom the cause is not clear.

Factors related to the onset have not been referred to in other series, but the classical description of the sudden onset of excruciating pain soon after eating or drinking requires to be revised in the light of this series. However the case reported by McDermott, Bartlett and Culver (1956) is of interest in this context. Their patient was a young wrestler who dieted to lose weight before a contest. After the "weigh in" he ate a meal of 2224 calories and within half an hour developed severe pain, which proved to be due to pancreatitis.

The physical signs are very variable, but a rise in temperature was found in 83.5 per cent of our patients: this contrasts with an incidence of 50 per cent in other series (Edlin and Sullivan, 1953; Fogerson and Shedd, 1955), and disagrees with the description by Cope (1963) of a sub-normal temperature. Shock and hypotension were infrequent findings, and Fallis (1953) has stressed the rarity of these signs. Grey-Turner's sign was seen in only two patients and Cullen's sign in four: all these patients died. Fallis (1953) has pointed out the infrequent occurrence of Grey-Turner's sign, and also stated that as it only occurs late in the disease, it is of no value in early diagnosis. Loewi's test was not carried out on any patients in this series.

Jaundice was present in 25 patients, though only 12 were shown to have gall-stones. Thus the presence of jaundice does not necessarily mean that stones are the cause (Howard and Ehrlich, 1963).

The most valuable diagnostic investigations

were the serum amylase and the white cell count: but normal values do not rule out the diagnosis if the appropriate clinical picture is present (Abruzzo, Homa, Houch and Coffey, 1958). The serum calcium and blood glucose levels are important in management of the severe cases. Five patients with low serum calcium all died, but the investigation was not carried out on all patients. Two patients with raised serum calcium levels were shown later to have parathyroid disease: one was a benign adenoma discovered after recurrence of the pancreatitis, and the other was a carcinoma. We did not see an example of the paradox in which a patient with hyperparathyroidism has a normal serum calcium due to the elevated level falling during the attack. The fasting blood sugar was raised in 92 per cent of the patients in whom it was estimated. We consider that this test should always be performed, as it may indicate that insulin is required in patients who are not responding well to treatment.

The mortality is similar to that of other reports, though the stage at which death occurs has altered in recent years. Rodney Smith (1959) has pointed out that intravenous therapy and antibiotics will tide the patient over the stage of shock in which they formerly died; they will then deteriorate several days later, due to pancreatic necrosis and secondary sepsis.

Conclusions

From our survey, we consider that the following points should suggest the diagnosis of acute pancreatitis: abdominal pain, mainly in the epigastrium, and not necessarily very severe; the onset may have been sudden, but usually it is spread over a few hours. The pain is not usually combined with as much tenderness or rigidity as the history might suggest: peritonitis is not usually well-marked. There will be fever, and a raised white cell count: the serum amylase will be raised at some stage. Other conditions may exist requiring different management, so continued observation of the patient is necessary. We can endorse the wide variation in the clinical picture stressed by other authors. At present, mild cases are too often missed and the appropriate investigations are not carried out, with the result that the patient may be exposed to further hazardous attacks.

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