We have been fortunate in our group that the executive committee has elected the medical superintendent as chairman of the executive committee. He has in the past spent a large amount of time on administration, so this position did not require him to radically alter his timetable. Nevertheless, in groups where the chairman does not already spend a large part of his time on administrative duties he must get considerable support from his colleagues within his specialty. But any clinician must be able to act as chairman either of his division or of the medical executive committee. The fact that one of our four consultant general surgeons is at the present time mayor of the city illustrates that many consultants can find time for this amount of administration if the will is there.

Any group contemplating setting up this type of administration must insist on adequate clerical help to assist both the executive committee and the divisions with clerical work and also to produce and collate the necessary statistics.

We agree with the Cogwheel report that it is difficult for hospitals with fewer than 20 to 30 consultants to have a divisional system of administration but consider that all but the smallest groups could elect a small executive committee from their medical advisory committee, who could then meet more

regularly than the main committee and come to decisions more quickly and effectively than previously.

Conclusions

We agree with the Cogwheel report that each individual group must tailor the suggestions to their own requirements. If the hospital medical staff do not streamline their own administration before the reunification of the health service and the setting up of area health boards we will probably be administered increasingly by non-medical administrators and have little say in the running of our hospitals.

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Clinical Problems

Diagnostic Abdominal Paracentesis

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Summary

Diagnostic abdominal paracentesis was performed in 43 patients in whom the diagnosis was uncertain. It was found to be particularly useful in abdominal pain resulting from trauma. In 12 patients the findings led to their being spared a laparotomy while in several other patients they led to very early diagnosis of the lesion responsible enabling early surgical treatment to be undertaken. A false-negative result was obtained in only one patient. It is concluded that diagnostic abdominal paracentesis is an extremely reliable diagnostic aid and can lead to improved surgical care of the patient with atypical acute abdominal pain.

Introduction

It is sometimes difficult to make a firm diagnosis when a patient has acute abdominal pain, and occasionally an exploratory laparotomy is performed to exclude a serious intra-abdominal disorder. These difficulties arise particularly when the patient

has superficial abdominal injuries and localized tenderness prevents a complete examination or when there are severe injuries, as after a road-traffic accident, when any observed changes in pulse rate or blood pressure may be wrongly ascribed to other injuries and the diagnosis, perhaps of a ruptured spleen, is made only after the patient is nearly exsanguinated.

Diagnostic abdominal paracentesis has been suggested as a useful diagnostic aid,¹ but the technique—a four-quadrant abdominal tap with a sharp needle—has not found favour, presumably owing to fears of puncturing a hollow viscus and the risk of a false-negative tap.² Various approaches have been suggested, including palpating the abdomen in the area of maximal tenderness³ and aspirating in the flanks with a variety of needles, including glass needles, intramuscular needles, and spinal needles.

From our experience with peritoneal dialysis it became apparent that fluid always collected in the pouch of Douglas and that this part of the abdominal cavity will still contain fluid when the rest of the cavity is free from fluid. It seemed logical therefore that a catheter placed there would greatly improve the chances of obtaining a sample of any free fluid if there was any abdominal morbidity and would minimize the risk of a false-negative result. A preliminary report was published⁴ indicating that this technique could be a useful diagnostic aid, and as a result of further experience we report our assessment of the usefulness of abdominal paracentesis in acute abdominal conditions.

Methods

Over the past few years abdominal paracentesis has been used as a diagnostic aid in the intensive care ward of Sundsvall

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Hospital, which is a large general district hospital. Altogether 43 patients (26 males, 17 females) with acute abdominal pain presented diagnostic difficulties. Of these patients 23 had abdominal pain resulting from some kind of accident, of which 17 were road accidents and 6 varied from a kick in the abdomen by a horse to crush injuries sustained during excavations for road works. Of the remaining 20 patients 13 had acute abdominal pain in which there was difficulty in the differential diagnosis, while 7 had excessive pain or hypotension occurring after various operations. The technique of abdominal paracentesis was the same as that used for the introduction of a catheter for peritoneal dialysis.⁵ Under local anaesthesia a small skin incision is made about 3-5 cm below the umbilicus in the midline and a trocar and cannula are pushed through the parietal peritoneum. The trocar is then removed and a soft flexible plastic catheter (a dialysis catheter is ideal) is inserted into the peritoneal cavity and gently manipulated into the pouch of Douglas. Any fluid in the abdomen will collect there. A small sample of fluid is then aspirated for examination. If necessary a small amount of peritoneal dialysate solution is washed in to facilitate sample aspiration. With a gentle approach the technique causes little distress to the patient—for example, less than a lumbar puncture—and the diagnostic information can be as useful.

Results

TRAUMATIC CASES

Of the 23 post-traumatic cases 15 had free blood in the peritoneal cavity as a result of visceral laceration. Seven of these patients had a ruptured spleen, three had a ruptured liver, and the remaining five had torn mesenteric or iliac vessels. One patient had a ruptured ileum, while there were negative paracentesis findings in seven of the patients, who were then treated conservatively.

Case 1.—A man aged 69 was kicked in the abdomen by a horse. He presented with extensive abdominal bruising and severe abdominal pain. Abdominal paracentesis showed faecal fluid in the peritoneal cavity, and at operation much bruising and a small tear in the ileum were found.

Case 2.—A man aged 26 had a crush injury to the lower half of his body resulting in a complete paraplegia. He had persistent hypotension and pallor and the differential diagnosis included severe abdominal trauma. Abdominal paracentesis was negative and his subsequent progress under conservative treatment confirmed the absence of serious intra-abdominal injury.

Case 3.—A man aged 30 had severe abdominal pain and bruising resulting from a whiplash injury when he was hit by a steel cable. Abdominal paracentesis showed free blood in the peritoneum and an immediate laparotomy confirmed that he had a ruptured liver.

Case 4.—A 16-year-old youth had severe concussion after a head injury sustained in a road-traffic accident. There was also extensive bruising on the abdominal wall. Abdominal paracentesis was negative and he was treated conservatively. He made an uninterrupted recovery.

SURGICAL CASES

Thirteen cases presented diagnostic difficulty because of the severity of the pain or its atypical history. Four of these patients were found to have acute haemorrhagic pancreatitis, with blood-stained fluid in the aspirate. In addition in one of these four patients bile was present in the aspirate as well and a biliary leak from the pancreatitis was confirmed at laparotomy. Another patient was found to have blood in the peritoneal cavity from a slowly leaking aortic aneurysm. In two patients a diagnosis of a perforated gall bladder was made at paracentesis and the diagnosis was subsequently confirmed at operation, while a third patient had bile-tinted yellow fluid in the aspirate and at operation acute-on-chronic cholecystitis was found. In yet

another patient the presence of turbid fluid led to operation in which a perforated appendix was found. In two patients there was no peritoneal exudate or fluid; one was treated conservatively and made a rapid and complete recovery from his abdominal pain, while the other patient who was also jaundiced died a few days later. Necropsy showed multiple secondary deposits from cancer of the pancreas.

In the remaining two patients in whom paracentesis was performed the technique was unhelpful.

Case 5.—This patient, a man aged 66, had lower abdominal pain and was thought to have acute appendicitis. Because the history was atypical, however, a paracentesis was performed, and this produced a few millilitres of brownish fluid. At operation the appendix was macroscopically normal and no other disease was found. He made a complete recovery.

Case 6.—The patient, a man aged 63, was a diabetic. A year before the present admission he had had a severe myocardial infarction. He presented with severe upper abdominal pain and dyspnoea. The E.C.G. was abnormal and showed equivocal evidence of a fresh infarction. Paracentesis was negative. As a result he was treated expectantly but it soon became apparent that he had acute cholecystitis. He subsequently had a cholecystectomy and made an uneventful recovery.

POSTOPERATIVE CASES

Seven patients required abdominal paracentesis because of postoperative hypotension and pain. Two of these patients had faecal fluid in the abdominal cavity resulting from anastomotic leaks. Two had postoperative haemorrhage and two had accumulation of bile after gall-bladder resections. The remaining patient was the only one in the entire series in whom the paracentesis caused difficulty.

Case 7.—A man aged 59 had a gall-bladder resection after recurrent attacks of acute cholecystitis. After operation he developed a severe paralytic ileus. Abdominal paracentesis produced frank faeces and it was obvious that the catheter had perforated the bowel. At laparotomy the intestines were found to be adherent to the anterior abdominal wall. There were many adhesions, peritonitis was present, and pus was found around the gall-bladder bed on the liver surface. After a stormy convalescence he made a full recovery.

Discussion

The results of paracentesis in the 13 surgical patients saved five patients having an unnecessary laparotomy—that is, the three patients with pancreatitis who were treated by repeated peritoneal dialysis⁶ and two of the patients in this group who had negative findings—while the doubtful results in one patient led to an equivocally necessary appendicectomy. There was one false-negative result, probably due to minimal inflammation of the peritoneal covering of the gall bladder.

In the postoperative group of patients the paracentesis findings led to an earlier reoperation than might perhaps otherwise have been performed and was considered to have been of great diagnostic help by the respective surgical teams. Nevertheless, when there has been recent extensive abdominal inflammation and adhesions are present the technique is obviously not without hazard.

In the group of patients with trauma the negative findings in seven saved them from exploratory laparotomy. Perhaps more important in those cases with positive findings of internal haemorrhage or a ruptured viscus the diagnosis was frequently made before the classical signs of hypovolaemic shock had time to develop. In turn this enabled a much earlier operation to be undertaken while the patient was still reasonably fit and so reduced the overall morbidity. It was seen that it is in this type of patient that diagnostic abdominal paracentesis has its greatest value; a positive diagnosis can be made and corrective treatment

undertaken before the patient's clinical state has had time to deteriorate, while a negative finding means that the presence of a serious internal injury is unlikely.

The technique of introducing a pliable catheter into the pouch of Douglas appears free of major hazard unless there are extensive abdominal adhesions. It has the added advantage that if peritoneal dialysis is needed, as in the dialysis treatment of acute haemorrhagic pancreatitis, the catheter can be left in position. Finally, if there is still doubt after a negative finding in the pouch of Douglas the catheter can be manipulated gently towards the spleen or liver and a small dialysis wash-out performed in these regions.

The success rate of this series with respect to obtaining a positive result when disease was present and a negative one in the absence of disease, as well as a comparative lack of false-positive and false-negative results, was very rewarding and much higher than that reported in earlier series when a simple needle aspiration technique was used.⁷ The incidence of false-negative results was significantly lower than the 10% previously reported.⁸ The improvement in the result is presumably due to the technique and materials used—that is, using a catheter long enough to reach into the pouch of Douglas and which is firm enough to be directed there. Washing out the area with a dialysate solution in order to recover even small quantities of exudate is also an advancement in the technique. With these improvements a negative finding has achieved greater significance and in our hands has led to an appreciable reduction in the need for exploratory laparotomy.

Fears have been expressed about the danger of damaging a viscus.⁹ While this may have been a real hazard when spinal needles or glass tubes were used, with modern synthetic materials, which are both flexible and pliable, it was apparent that this

risk has been much reduced. This accords with our own experience of repeated peritoneal catheterization for peritoneal dialysis, in which patients have had repeated catheterizations, sometimes extending over a period of several years, for treatment of renal failure without any complication of this kind.

The findings of abdominal paracentesis, however, cannot be considered on their own but must be taken into consideration along with the patient's history and clinical condition. A negative finding in patients with pains arising de novo does not necessarily exclude abdominal disease; it merely means that the visceral peritoneum is not inflamed and so not generating any exudate. Such patients should be watched carefully and if necessary the abdominal catheterization repeated if the clinical condition continues to warrant this. From the results presented, however, it is clear that abdominal paracentesis is a useful diagnostic aid and not infrequently prevents patients having an unnecessary laparotomy. Equally important is that where an early diagnosis can be made the appropriate surgical treatment can be started immediately, before the patient's clinical condition has had time to deteriorate.

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Work in Progress

Medical Research Unit in a District General Hospital

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In June 1946 the half-million people of Stoke-on-Trent and its environs were served by six separate hospitals staffed by 30 consultants and 30 junior staff. In 1971 an integrated hospital centre of 1,500 beds on one single campus was staffed by 86 consultants and 120 junior staff. This expansion, paralleled elsewhere in the Health Service, involved the creation of specialized units such as for neurology, neurosurgery, thoracic surgery, and cardiology, a renal unit, a coronary care unit, and units for rheumatology and gastroenterology. The additions to the consultant staff coupled with

retirements have resulted in an average age among consultants being in the mid-40s.

In the first 10 years of the National Health Service postgraduate medical activities in Stoke-on-Trent were the province of the local medical society. It soon became apparent that the future medical scene would be highly competitive in terms of staff at both senior and junior levels. Monthly clinical meetings held in the nurses' lecture hall borrowed for the occasion would clearly not meet the need. Therefore in 1959 a public appeal sponsored by Sir George Wade was opened with the aim of obtaining funds to build a medical institute which would encourage both postgraduate education and medical research. With £100,000 raised by the appeal the North Staffordshire Medical Institute was built and opened in 1963 and provided a lecture hall, library, and ancillary facilities.

The Institute was the prototype of many subsequent postgraduate institutes in large district general hospitals and paved the way for a two-phase development in postgraduate activities—that is, postgraduate education and clinical research. Since the concept of an active research unit was so dependent on the initial establishment of a successful system

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