Perforated peptic ulcer

Epidemiology

Previously, most patients were middle aged, with a ratio of 2:1 of male:female. With time there has been a steady increase in the age of the patients suffering this complication and an increase in the numbers of females, such that now perforations most commonly occur in elderly female patients. NSAIDs appear to be responsible for most of these perforations.

Clinical features

The classical presentation of perforated duodenal ulcer is a patient, who may have a history of peptic ulceration, develops sudden onset severe generalised abdominal pain due to the irritant effect of gastric acid on the peritoneum. Although the contents of an acid-producing stomach are relatively low in bacterial load, bacterial peritonitis supervenes over a few hours usually accompanied by deterioration in the patient's condition. Initially, the patient may be shocked with a tachycardia but a pyrexia is not usually observed until some hours after the event. The abdomen exhibits a board-like rigidity and the patient is disinclined to move because of the pain. The abdomen does not move with respiration. Patients with this form of presentation need an operation without which the patient will deteriorate with septic peritonitis.

This classical presentation of the perforated peptic ulcer is observed less commonly than in the past. Very frequently the elderly patient who is taking NSAIDs will have a less dramatic presentation, perhaps because of the use of potent anti-inflammatory drugs. The board-like rigidity seen in the abdomen of younger patients may also not be observed and a higher index of suspicion is necessary to make the correct diagnosis. In other patients the leak from the ulcer may not be massive. They may present only with pain in the epigastrium and right iliac fossa as the fluid may track down the right paracolic gutter. Sometimes perforations will seal owing to the inflammatory response and adhesion within the abdominal cavity and so the perforation may be self-limiting. All of these factors may combine to make the diagnosis of perforated peptic ulcer difficult.

By far the most common site of perforation is the anterior aspect of the duodenum. However, the anterior or incisural gastric ulcer may perforate and, in addition, gastric ulcers may perforate into the lesser sac, which can be particularly difficult to diagnose. These patients may not have obvious peritonitis.

Investigations

An erect plain chest radiograph will reveal free gas under the diaphragm in excess of 50 per cent of cases with perforated peptic ulcer. All patients should have serum amylase performed, as distinguishing between peptic ulcer, perforation and pancreatitis can be difficult. Measuring the serum amylase, however, may not remove the diagnostic difficulty. It can be elevated following perforation of a peptic ulcer although, fortunately, the levels are not usually as high as the levels commonly seen in acute pancreatitis. Several other investigations are useful if doubt remains. A water soluble contrast swallow will show a free peritoneal leak. Diagnostic peritoneal lavage will usually easily distinguish between perforation and pancreatitis, and a CT scan will normally be diagnostic in both conditions, although this is seldom necessary.

Treatment

The initial priorities are resuscitation and analgesia. Analgesia should not be withheld for fear of removing the signs of an intra-abdominal catastrophe. If anything, adequate analgesia makes the clinical signs more obvious. Following resuscitation and the diagnosis being established the treatment is principally surgical.

Laparotomy is performed usually through an upper midline incision if the diagnosis of perforated peptic ulcer can be made with confidence. This is not always possible, and hence it may be better to place a small incision around the umbili-cus to localise the perforation with more certainty. Alternatively, laparoscopy may be employed. The most important component of the operation is a thorough peritoneal toilet to remove all of the fluid and food debris. If the perforation is in the duodenum it can usually be closed by several well-placed sutures, closing the ulcer in a transverse direction as with a pyloroplasty. It is important that sufficient tissue is taken in the suture to allow the edges to be approximated, and the sutures should not be tied so tight that they tear out. It is common to place an omental patch over the perforation in the hope of enhancing the chances of the leak sealing. Gastric ulcers should, if possible, be excised and closed, so that malignancy can be excluded. Occasionally a patient is seen who has a massive duodenal or gastric perforation such that simple closure is impossible and in these patients a ***Billroth II gastrectomy*** is a useful operation.

All patients should be treated with systemic antibiotics and there may be some advantage in washing out the abdominal cavity with tetracycline, 1 g in 1 litre of isotonic saline. In the past many surgeons performed definitive procedures such as either truncal vagotomy and pyloroplasty or, more recently and probably more successfully, highly selective vagotomy during the course of an operation for a perforation. Studies show that in well-selected patients and in expert hands this is a very safe strategy. However, most commonly nowadays surgery is confined to first-aid measures and the peptic ulcer treated medically as described earlier in this chapter. Following operation gastric antisecretory agents should be started immediately.

Perforated peptic ulcers can often be managed by minimally invasive techniques if the expertise is available. The principles of operation are, however, the same; thorough peritoneal toilet is performed and the perforation closed by intracorporeal suturing. Whatever technique is used it is important that the stomach be kept empty postoperatively by nasogastric suction, and gastric antisecretory agents commenced to promote healing in the residual ulcer.

A great deal has been written about the conservative management of perforated ulcer. Some writers say that virtually all patients can be managed conservatively, whereas most surgeons have difficulty in understanding how a patient who is ill with widespread peritonitis and who has food debris widely distributed through the abdominal cavity will improve without an operation. However, there are undoubtedly patients who have small leaks from perforated peptic ulcer and relatively mild peritoneal contamination who may be managed with intravenous fluids, nasogastric suction and antibiotics. These patients are in the minority.

Patients who have suffered one perforation may suffer another one. They should therefore be managed aggressively to ensure that this does not

happen. In patients with Helicobacter-associated ulcers, eradication therapy is appropriate. Patients on NSAIDs, who now form the majority of such patients, should have the drug withdrawn and another analgesic substituted. If it is necessary to continue the NSAIDs the patient should have concomitant treatment with a proton pump inhibitor such as omeprazole.

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