Intraperitoneal ivalon mimicking peritoneal malignancy after plugged percutaneous liver biopsy

N P Thompson, P J Scheuer, R Dick, G Hamilton, A K Burroughs

Abstract

Intraperitoneal ivalon mimicking peritoneal malignancy after plugged percutaneous liver biopsy is reported in a 20 year old woman with a history of nausea and abdominal distension.

(Gut 1993; 34: 1635)

Plugged liver biopsies are both effective and safe when used to perform percutaneous liver biopsies in patients with impaired coagulation.^{1,2} A variety of substances have been used to plug the biopsy tract during needle withdrawal, one of which is ivalon, a polyvinyl foam (150–300 µ particle size). Complications of its intraperitoneal leakage have not previously been described.

Case report

A 20 year old woman was admitted with a four week history of nausea and abdominal distension. She had a past history of Crohn's disease which was quiescent and she was taking oral contraceptives. Examination showed moderate hepatomegaly and ascites. Investigation including imaging and a standard percutaneous liver biopsy, which showed congestion, some necrosis, but no fibrosis, confirmed the clinical diagnosis of venous outflow obstruction. The patient was treated with anti-coagulation, pending a portocaval shunt operation.

Shortly afterwards, however, the patient

deteriorated, with worsening ascites. A second plugged liver biopsy was performed with ultrasound guidance to assess necrosis. The prothrombin time was 21 seconds (INR 1.9) despite vitamin K administration. This was performed with an 18 gauge Biopsy cut needle and ivalon, and showed more extensive necrosis with early fibrosis. Nine days later she had a laparotomy with a view to performing a portosystemic shunt.

At operation she was noted to have multiple, grey, firm peritoneal nodules mainly in the infrahepatic space but also throughout the peritoneum. Biopsy specimens showed multinucleated foreign body giant cells surrounding irregular, angular vacuolated fragments (Figure). The liver was seen to be severely congested. Unfortunately, the patient deteriorated after fashioning of the portosystemic shunt. She was referred for an urgent orthotopic liver transplant, which was subsequently performed.

Discussion

Ivalon, when histologically prepared by a similar method to the biopsy specimen, was found to be identical to the central material of the peritoneal nodule. It is presumed that ivalon injected to plug the liver biopsy leaked intraperitoneally and caused the foreign body reaction seen. This complication has, as a result of a diagnostic or therapeutic procedure in humans, not been previously described. A similar reaction, however, is described experimentally in rabbit bladder and guinea pig subcutaneous tissue.^{3,4} Although this complication is unlikely to cause overt clinical problems it may result in diagnostic confusion particularly with peritoneal malignancy. In this patient a computed tomography before operation did not show any peritoneal abnormalities. We feel it is important that clinicians using ivalon are aware of this reaction, which might be a frequent occurrence especially when the operator attempts to plug the entire length of the biopsy tract in a patient with a coagulopathy.

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Accepted for publication
4 March 1993

Peritoneal biopsy specimen showing multinucleated foreign body giant cells surrounding irregular, angular vacuolated fragments. (Original magnification $\times 175$.)

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