Radiographic demonstration of gastric variceal bleeding

K. J. HOURIGAN

From the Department of Medicine, Royal Free Hospital, London

SUMMARY A case is reported where emergency percutaneous splenoportography demonstrated an actively bleeding gastric varix. The radiographic appearance is described and the indications for this procedure are discussed.

Reports of emergency portal radiography in actively bleeding oesophagogastric varices are few. In such circumstances percutaneous splenoportography is rarely justified, and in the venous phase of coeliac-mesenteric arteriography, due to dispersal of contrast medium, opacification of collaterals, if achieved, is never as dense as with intrasplenic injection (Kreel, 1970).

O'Sullivan and Evans (1955) performed emergency splenoportography in several cases of bleeding varices with a Sengstaken-Blakemore tube in position but the gastrooesophageal collaterals did not fill completely in the presence of venous tamponade and bleeding points were not demonstrated. Using emergency percutaneous abdominal arteriography Baum, Nusbaum, Blakemore, and Finkelstein (1965) demonstrated the site of variceal bleeding in one case. With similar techniques Koehler and Salmon (1967) and Boijesen, Ekman, and Olin (1963) did not see extravasation of contrast in the venous phase in the presence of actively bleeding varices.

Case Report

The patient, a woman aged 65 years, was known to have primary biliary cirrhosis with portal hypertension and oesophagogastric varices. She was admitted to hospital on this occasion following haematemesis and melaena. During the following four days standard medical procedures (Sherlock, 1968) failed to control the bleeding and a total of 24 units of whole blood was given. Serum bilirubin was 13 mg% (12 mg% conjugated), serum albumin 3.7%, platelet count 66,000/c mm, Thrombotest 100%. Blood loss was entirely per rectum after the initial haematemesis. Early mild hepatic encephalo-

pathy was fully controlled with oral neomycin, an EEG was within normal limits, and the patient was alert and cooperative.

At this stage it was considered that surgery offered the best chance of success and emergency percutaneous splenoportography was performed pre-operatively. There were no untoward effects.

Figures 1-4 represent serial films taken at two, five, 12, and 20 seconds after the mid-point of injection of 40 ml of 45% sodium diatrizoate (Hypaque) under 40 lb/sq in. pressure. The portal vein was patent, uniformly opacified, and measured 1.5 cm at 1 cm from its bifurcation at the hilum of the liver. Apparent velocity of flow of portal blood (calculated from two-dimensional data) was not greater than 12 cm/sec. An enormous collateral left gastric vein arising from the splenic vein was continuous with large variceal formations in the region of the gastric cardia and lower oesophagus. The striking feature was the blush in the region of the gastric fundus first seen at two seconds (arrow Fig. 1), interpreted as extravasation from a short gastric collateral well before contrast was seen to arrive via the left gastric vein. In subsequent films the blush was seen to enlarge and become rounded (Figs. 2-4), finally to 'target' with central fading (Figs. 3 and 4), remaining as a distinct density after all intravenous contrast had cleared (Fig. 4). The 'target' formation was interpreted as contrast-free blood diluting the centre of the blood-dye pool, and the triradiate lines (arrow, Fig. 4) as ridges of gastric mucosa between pools of the heavier dye gravitating to the troughs.

An emergency end-to-side portacaval shunt was performed but bleeding from the upper gastrointestinal tract continued and was complicated by progressive oliguric renal failure. The patient died

Fig. 1 Two seconds after injection. Arrow indicates early extravasation of contrast into stomach, probably from a short gastric vein.

Fig. 2 Five seconds after injection. Patent portal vein, 1.5 cm diameter. Large varices are beginning to opacify in the gastric cardia and lower oesophagus.

Fig. 3 Twelve seconds after injection. Extravasate large and rounded, central 'target' appearing as dye almost cleared from varices.

Fig. 4 Twenty seconds after injection. Residual 'target' extravasate after all intravenous collateral dye has cleared. Arrow indicates triradiate lines representing ridges of gastric mucosa.

on the 13th postoperative day. Permission for post-mortem examination was refused.

Discussion

Percutaneous splenoportography has been in use since 1951 (Leger, 1951) as a valuable aid in the investigation of the portal venous system. Its main use is in demonstrating the presence of a patent portal vein of suitable dimensions in portal hypertension where surgical decompression is contemplated for bleeding oesophagogastric varices. An abnormal collateral circulation when present will usually be opacified. The intrahepatic portal venous tree may show the 'tree in winter' appearance seen in cirrhosis, and occasionally it is of value in delimiting and differentiating hepatic tumours, abscesses, and cysts. Splenoportography is essential for a secure diagnosis of portal or splenic vein block and may sometimes be helpful in the delimitation and diagnosis of pancreatitis, pancreatic tumour (Rösch, 1967), upper abdominal masses, and hepatomegaly and splenomegaly of unknown cause.

Since the procedure is not without hazard, principally traumatic splenic haemorrhage, it is ordinarily performed electively under conditions of stable haemodynamic equilibrium with strict minima of clotting indices and the fullest cooperation by the patient. Recognized variceal bleeding can, in most cases, be controlled with standard medical measures using pitressin with or without oesophagogastric tamponade, and suspected varices are best managed by medical means and proven later by appropriate techniques such as endoscopy, upper gastrointestinal barium series, splenoportography, selective

abdominal arteriography, or umbilical vein catheterization. Occasionally emergency splenoportography may be considered in a patient with uncontrolled haemorrhage and known or strongly suspected varices where an emergency surgical shunt or variceal ligation is contemplated. In these circumstances demonstration of a suitable vein for anastomosis and the level of the bleeding point would be valuable information in planning the surgical attack and would justify the compounded hazard. It is rare, however, to find a patient in such unfavourable circumstances who is sufficiently alert and cooperative, is free of gross ascites, and whose clotting potential is well preserved.

In the case reported here these criteria were fulfilled except that the platelet count was low. The patient suffered no ill effects from the investigation and the valuable information obtained significantly assisted preoperative surgical planning.

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