TREATMENT OF PORTAL HYPERTENSION IN CHILDREN*

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Bleeding oesophageal varices in association with splenomegaly are a serious syndrome highly suggestive of portal hypertension. Blakemore and Lord (1945) and Whipple (1945) described a successful method of treating the condition: they short-circuited the congested portal flow directly to the caval system. This method opened up a possibility of treating portal hypertension in children. Of our own 82 patients operated upon because of portal hypertension, 33 were below 20 years of age. The material is classed according to age and site of the portal block in Fig. 1, from which it is apparent that in childhood the block was most frequently extrahepatic, while intrahepatic block, which was usually seen in patients with liver cirrhosis, was most common between the ages of 40 and 60 years.

Splenoportography and measurement of the intra-splenic pressure proved useful in the establishment of a pre-operative diagnosis in both children and adults. Splenoportograms of children with portal hypertension are given in Figs. 2 and 3 and typical radiographs with intra- and extrahepatic block in Figs. 4

and 5. The main indication for surgical intervention was oesophageal haemorrhage. The purpose of treatment was to reduce portal hypertension and thereby the tendency to oesophageal haemorrhage by the establishment of a shunt between the portal and the caval systems.

Intrahepatic Block

Of eight patients with intrahepatic block, an anastomosis was established in seven (Fig. 6). In the eighth only splenectomy was possible. Of these seven patients, one died three years later in hepatic coma. Post-mortem examination revealed a patent spleno-renal anastomosis at least 1 cm. in width. In one patient oesophageal haemorrhage recurred about a fortnight after the operation for which reason a direct portacaval shunt was established after a further 14 days. Oesophageal bleeding did not recur during the following 20 months, that is, until August, 1956, when the patient died from necrotising liver cancer which might have been due to malignant degeneration of the primary disease, cirrhosis of the liver. The anastomosis was perfect. The other five patients have been symptom-free for one to seven years.

* A paper read at the meeting of the British Association of Paediatric Surgeons in London in July, 1956.

FIG. 1.—
Location of
portal block
at different
ages.

FIG. 2 (A).—Intrahepatic block, with occluding thrombus in the portal vein. Note the flow of blood through the collaterals.

FIG. 2 (B).—The same case after portacaval anastomosis. The blood flow through the collaterals has ceased.

FIG. 3.—Portal hypertension with extrahepatic block. A collateral stricture is seen in the hilum of the liver.

FIG. 4.—Portal hypertension due to intrahepatic block. Narrow vessels in the liver. Extensive collaterals.

FIG. 5.—Extrahepatic block due to thrombosis of the splenic vein. Fig. 6.

FIG. 6.—Distribution of intrahepatic block in seven cases.

Extrahepatic Block

Not Previously Splenectomized. This group consisted of 21 patients, aged 2-20 years (Fig. 7). After spleno-renal anastomosis haemorrhages recurred in nine. Of these, bleeding was fatal in six. The remaining nine have since been symptom-free (follow-up one to four years). In the two patients in whom spleno-renal anastomosis was established (vitallium tube) haemorrhages recurred.

Previously Splenectomized. The surgical results obtained in patients who had previously been splenectomized, including those who had had recur-

FIG. 7.—Distribution of extrahepatic block (not splenectomized) in 21 cases.

FIG. 8.—Distribution of extrahepatic block (splenectomized) in 17 cases.

FIG. 9.—Results of portacaval and spleno-renal anastomosis.

rent haemorrhages after spleno-renal anastomosis, are given in Fig. 8. All of the six patients in whom an anastomosis had been established had haemorrhagic recurrences. Direct attack upon the oesophageal varices, i.e., intra-oesophageal division of varicose veins or partial oesophago-gastrectomy appeared to give more encouraging results. Of the six patients treated in this way, only one had a recurrence. In three of these cases the follow-up period is as yet only one year, and therefore not long enough to say anything definite about the prognosis.

The results thus show that half of the patients with extrahepatic block and treated by the establishment of a spleno-renal anastomosis had recurrences, while the results achieved in patients with intrahepatic block were somewhat more favourable. In patients who had previously undergone splenectomy, only six out of 17 were symptom-free one year after the operation.

It is thus apparent that the primary mortality was higher in the group with intrahepatic block, but that the tendency to recurrence was considerably higher in the group with extrahepatic block, especially in the subgroup in which the patients had previously undergone splenectomy.

Fig. 9 shows the results of portacaval anastomosis and spleno-renal anastomosis achieved in the entire material, i.e., including adults. After portacaval anastomosis, all of the 26 patients who survived were free from recurrences, while 13 of 33 survivals after spleno-renal anastomosis had recurrences. The more favourable results of portacaval shunt can be explained (at least in part) by the fact that the lumen is larger and therefore involves less risk of occlusion than spleno-renal anastomosis, since we have been able to show that anastomosis large enough to relieve portal hypertension will control the tendency to

recurrent oesophageal haemorrhage. In the treatment of portal hypertension in children the problem is to find a vessel wide enough to permit anastomosis for reducing portal hypertension without undue risk of subsequent occlusion. This might be achieved by the method recommended by Clatworthy, Wall and Watman (1955), i.e., division of a caval vein just above the bifurcation and anastomosing it end to side with a portal vein at its origin. A combination of the division of the vessels up towards the oesophageal region and a spleno-renal anastomosis might produce good results. Such a procedure should conduct more blood through the anastomosis and thereby possibly decrease the risk of occlusion.

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