Arterial embolization in the management of liver tumour with recurrent hypoglycaemia

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Summary  
A patient with recurrent hypoglycaemic episodes resulting from hepatic metastases of a malignant retroperitoneal haemangiopericytoma is described. Effective control of hypoglycaemia has been achieved by trans-catheter hepatic arterial embolization on 5 separate occasions.

Introduction  
The secretion of a hormone with insulin-like activity by hepatic metastases is an uncommon complication of non-pancreatic malignant tumours (Laurent, Debry and Floquet, 1971). A case is now reported of retroperitoneal malignant haemangiopericytoma with recurrent hypoglycaemic attacks resulting from hepatic metastases. Following hepatic angiography, hypoglycaemia has been effectively controlled by trans-catheter hepatic arterial embolization on 5 separate occasions.

Case report  
A 19-year-old labourer presented in December 1978 with hypoglycaemic episodes and low back pain. On examination he had a large fixed lower abdomino-pelvic mass which at laparotomy was found to be retroperitoneal. It was highly vascular with infiltration into the pelvic mesocolon and a metastasis was present in the right lobe of the liver. Histology of the primary lesion, lymph nodes and hepatic metastasis indicated malignant haemangiopericytoma. Radiotherapy of the primary lesion produced an excellent response with marked reduction in the abdomino-pelvic mass and cessation of the hypoglycaemic episodes. In May 1979 hypoglycaemic episodes recurred and the patient was found to have gross hepatomegaly. Palliative hepatic irradiation resulted in symptomatic improvement. In August 1979 the hypoglycaemic attacks recurred associated with grand mal convulsions. Selective hepatic arteriography was carried out and demonstrated the presence of numerous large highly vascular deposits throughout all areas of the liver (Fig. 1). Late films confirmed a normal portal venous flow. Embolization of the hepatic arterial supply was carried out immediately following angiography with fragments of gelatine sponge introduced through the angiographic catheter (Athanasoulis, 1980) (Fig. 2). Following this procedure right hypochondrial pain and fever persisted for 5 days. The patient had no further hypoglycaemic attacks and was discharged home 6 days after embolization.

Recurrence of hypoglycaemic episodes occurred in January, April, August and October 1980. On each occasion trans-catheter hepatic arterial embolization was repeated under local anaesthesia with complete relief of hypoglycaemic symptoms and a characteristic febrile and hepatic pain response lasting for 5 days. Hepatic arteriography carried out before embolization revealed partial recanalization of the previously completely occluded hepatic arterial supply and recurrence of highly vascular deposits. The embolic materials used were gelatine sponge, prepared human dura and wire coils with dacron threads (Gianturco, Anderson and Wallace, 1975). Hormone studies during hypoglycaemic episodes suggested that the metastatic tumour was secreting hormones with insulin-like activity. This was exemplified by a plasma glucose of 1·5 mmol/l (normal range, 3·6–5·8 mmol/l) associated with a plasma insulin of 0·6 µu./l (normal range, 3–20 µu./l) and a plasma C-peptide level of 0·2 nmol/l (normal range, 0·2–0·69 nmol/l). Plasma gastrin, vasoactive intestinal polypeptide and somatostatin were normal. After each embolization the patient became free of hypoglycaemic episodes and returned to work.

Discussion  
In the management of hormone secreting metastases throughout both lobes of the liver, the role of surgery, radiotherapy and chemotherapy is limited (Allison, Modun and Jenkins, 1977). This report emphasizes the value of hepatic artery embolization in the palliative treatment of this problem. The technique is based on the fact that tumour deposits in the liver are supplied mainly by hepatic arteries
Case reports

Fig. 1. Selective hepatic arteriogram showing large, highly vascular tumour deposits throughout the very enlarged liver.

Fig. 2. After embolization, arteriography confirms complete occlusion of the hepatic arterial flow.
while the portal venous system provides the main supply to normal hepatic tissue. Development of collaterals and recanalization of embolized arteries tends to occur and leads to recurrence of symptoms, but the procedure can be successfully repeated. The technique has been used before in the treatment of metastatic insulinoma, gastrinoma, glucagonoma and vipoma (Allison et al., 1977; Allison, 1978) but this is thought to be the first report of non-pancreatic liver tumour with insulin-like activity effectively controlled by embolization.

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