Successful surgical removal of a hepatoma

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EDITORIAL SYNOPSIS A case of hepatoma in a girl of 15 without pre-existing liver disease is reported. The growth was removed by partial hepatectomy, and, histologically, it had a low degree of malignancy. In patients with such tumours there may be a sudden and unheralded decline in general health, emphasizing the need for early diagnosis and expeditious surgical treatment.

Primary tumours of the liver are sufficiently rare in the white-skinned races to excite interest, and Cruickshank (1961) estimates their necropsy incidence at 0.145% in Great Britain, which corresponds well with that found for Europe as a whole by Berman (1951). Hepatomas, defined as tumours arising from liver parenchyma, are three times commoner in the male, are rarely encountered before the third decade, and predominate in the sixth decade of life. Among the malignant tumours of infancy the disease is relatively common, taking third place after neuroblastomata and renal embryomata (Clatworthy, Boles, and Newton, 1960). It is generally recognized that in Great Britain the majority of hepatomas arise in livers already rendered abnormal, especially by cirrhosis (Parker, 1957) or haemochromatosis (Stewart, 1931).

These tumours are almost invariably malignant and curative treatment is seldom possible. They have a low sensitivity to irradiation with x rays or radioisotopes taken up by the liver, such as ^{32}P in the form of chromic phosphate or radioactive gold; their frequent multiplicity throughout the liver often precludes surgical removal. However, surgical extirpation of a hepatoma has been reported by Rosenberg and Ochsner (1948) and subsequently by Lemmer (1950), Henley and Thackray (1951), Otaki, Read, Stubbs, and Sculthorpe (1960), and Gourevitch, Orr, and Whitfield (1957). Although these tumours were either pedunculated or confined to the left lobe of the liver, in the case described by Otaki and his colleagues a right hemi-hepatectomy was successfully performed.

The case described in this report is of interest in that a hepatoma occurred in a girl without pre-existing liver disease; it was of low malignancy and was successfully removed.

CASE REPORT

A girl, aged 15 (hospital no. 178864), was admitted to

Ronkswood Hospital, Worcester, on 2 May 1962. She had been the subject of jocular comment for the past three months because of the increasing girth of the upper abdomen. Seen in the Out-Patient Department on 16 April she admitted no ill-health and presented as a cheerful, healthy, plump girl. The skin was free from blemishes but the upper abdomen was protruding. A firm, grossly nodular tumour, moving with respiration, filled the epigastrium.

On 17 April a blood count showed haemoglobin 12.8 g.%, W.B.C. 4,000 with a normal differential count, E.S.R. 117/200 mm. in one hour (Westergren), serum bilirubin 0.12 mg.%, alkaline phosphatase (pH 10) 22.8 units, total serum proteins 7.65 g.% (albumin 3.55%, globulin 4.1%), thymol turbidity 4 units. A complement-fixation test for hydatid disease was negative. Urine was normal. Radiographs of the chest were normal, and a barium meal showed no intrinsic alimentary lesion. The lesser gastric curvature was expanded around the tumour which seemed intimately associated with the liver.

The patient was admitted to hospital on 2 May 1962, and had visibly declined in health and vitality during the previous 14 days. Her pallor and lassitude were reflected in the haemoglobin level, 9.7 g.%, but she still looked well nourished.

OPERATION Two pints of citrated blood were transfused before the operation on 4 May and 4 pints during the procedure and the succeeding 48 hours. The tumour was approached through an upper left paramedian incision separating the rectus sheath from the xiphisternum. The left hepatic lobe was replaced by a massive, purple nodular growth which filled the epigastrium, was lightly adherent to the omentum, and had extended for some distance across the line of the falciform ligament into the right lobe. The omental veins were dilated and tortuous, free fluid filled the paracolic gutters but there was no trace of tumour dissemination; the spleen was not enlarged.

The omental attachments of the alimentary tract were separated from the tumour and when the parietal peritoneal connexions were divided the liver became mobile, the left diaphragmatic cupola was peeled off the mass, and the partition of the liver about 4 cm. to the right of the tumour was accomplished, ligating or

suturing the blood vessels as they appeared. The left primary hepatic vessels and the bile ducts became visible and manageable in this cleft and were divided. The left lobe, attached now only by the left hepatic veins, was finally dismembered by their division and ligation. The peritonealized raw surface of the right hepatic lobe was drained by a 1 cm. bore rubber tube.

Her subsequent clinical course was entirely satisfactory; she left hospital on 21 May and has since remained well (June 1963).

DESCRIPTION OF SPECIMEN The specimen is the expanded left lobe of liver (Fig. 1a), weighing 1,060 g. Whitish and greenish nodules project from behind the capsule and distort it. The cut surface shows an irregular lobulated neoplasm $15.5 \times 12 \times 10$ cm., the lobules varying in size from a few millimetres to 3 cm. The tumour seems to compress the surrounding liver tissue rather than actually to invade it, and it is variable in consistency, parts feeling very fibrous.

Microscopy The tumour is composed of liver cells which are somewhat variable in size and shape, their nuclei containing large nucleoli (Fig. 1b). No giant cells are seen nor any mitoses. There is a fair amount of fibrosis dividing the tumour into irregular groups of cells but the reticulin between the cells is of regular distribution.

FIG. 1a. *Enlarged left lobe of the liver tumour. It contains an irregular, lobulated neoplasm, measuring $15.5 \times 12 \times 10$ cm., which is compressing the surrounding liver rather than invading it.*

FIG. 1b. *The tumour consists of liver cells of variable size and shape with large nucleoli. There is a fair amount of fibrosis dividing the tumour into irregular groups of cells. The tumour appears to be virtually benign. Surrounding liver is normal.*

No portal tract-central vein pattern emerges nor are there any bile ducts. There is no sign of venous invasion. The tumour appears to be virtually benign. Special stains (Best's carmine and P.A.S.) show that the tumour cells lack glycogen. Adjacent liver tissue is normal.

POST-OPERATIVE INVESTIGATIONS OF SERUM
PROTEINS BY ELECTROPHORESIS

	14 May 1962	6 June 1962
Albumin (g./100 ml. blood)	3.7	4.4
Globulins (g./100 ml. blood)	4.3	2.5
Alpha 4	0.3	0.2
2	1.3	0.4
Beta	1.1	0.9
Gamma	1.6	1.0
Total protein (g./100 ml)	8.0	6.9
A.G. ratio (g./100 ml.)	0.9	1.8

On 14 May the serum S.G.O.T. transaminase level was 28 σ Frankel units and the serum S.G.P. transaminase level 12 σ Frankel units. Haemoglobin was 13 g. per 100 ml. on 14 May and 12.2 g. per 100 ml. on 1 June.

DISCUSSION

Primary liver tumours are rare in adolescents and the case reported is unusual in that massive liver enlargement seemed to be causing few symptoms. However, the sudden and rapid decline in the patient's condition should make surgeons somewhat hesitant in delaying the surgical exploration of tumours of this type.

Increases in the alpha and beta globulin fractions of the plasma proteins have been reported to be of value in the diagnosis of primary hepatomata (Otaki *et al.*, 1960). While we have no pre-operative data in our patient about these protein fractions the persistence of alterations of alpha, beta, and gamma globulin fractions two weeks post-operatively in our patient makes it not unreasonable to suppose that these changes might have preceded operation. It is suggested that other clinicians suspecting this tumour might explore the reliability of plasma protein derangement of this type. The varied serum alkaline phosphatase level in our patient, in the absence of bone and other forms of liver disease, was also of

some diagnostic value, and was present in four of the six cases of primary liver tumour reported by Otaki *et al.* (1960).

The operation of left hepatic lobectomy has proved itself a rewarding procedure in the hands of many surgeons. Clearly, right lobectomy could be attempted with less confidence, but the enterprise of Colcock (1948), Brunschwig (1953), Pack and Baker (1953), Raven (1957), and Lloyd-Davies and Angell (1957) has established a rational method of partial hepatectomy which warrants consideration in every case of suspected hepatoma without evidence of metastases and with adequate liver function.

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