Haemoperitoneum secondary to spontaneous rupture of liver tumour

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ABSTRACT

Hepatocellular carcinoma (HCC) is the most common primary tumour of the liver. Cholangio-hepatocellular carcinoma (CHC) is less common and is a variant of HCC. There are many similarities with HCC with the exception that CHC tend to be more aggressive. We report a case of a 50-year-old man who was diagnosed with CHC and suddenly deteriorated secondary to hepatic tumour rupture. Despite aggressive supportive care, his condition rapidly deteriorated and died. Autopsy showed ruptured CHC.

Keywords: Cholangio-hepatocellular carcinoma, hepatocellular carcinoma, tumour rupture, chronic liver disease

INTRODUCTION

Hepatocellular carcinoma (HCC) is one of the most common primary hepatic malignancies. It is the fifth most common cancer in the world and three times more common in men than women. [1] HCC is common in Africa and the Asia Pacific region with incidence of between 20 to 30 cases per 100,000 per year and with the incidence higher in the East Asian region. [2, 3] There are about one million deaths from HCC worldwide each year. [2] The common aetiologies are chronic hepatitis infections (hepatitis B and C), cirrhosis of all aetiologies and in certain regions like China and Africa, aflatoxin is an important cause. [2]

Cholangio-hepatocellular carcinoma (CHC) is a rare variant that has histopathological features of both HCC and cholangiocarcinoma. [4] CHC shares many similarities to HCC with the exception that it tends to be more aggressive and advanced at diagnosis. In most cases, it is managed as HCC. Unfortunately, most hepatic tumours are diagnosed in the advanced stages. Spontaneous rupture of liver tumours is not an uncommon manifestation and usually occurs without warning with fatal consequences. Therefore, diagnosis requires a high index of suspicion. We report a case of spontaneous rupture of CHC.

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CASE REPORT

A 50-year-old Filipino man was admitted with a month's history of intermittent abdominal pain and weight loss. He also had a week's history of jaundice. He was a smoker, married with children and had significant background history of alcohol consumption.

Physical examination revealed a malnourished jaundiced man. His abdomen was slightly distended with hepatomegaly. Laboratory investigations revealed serum haemoglobin of 12 gm/dl (normal range 13.5 to 18), leukocytosis of 14.5 $\times 10^9$/L (4.0 to 11.0), and normal platelet count of 293 x 10^9/L (150 to 450). Liver profile was deranged; total bilirubin 135 mmol/L (3.4 to 20), serum alanine aminotransferase of 54 U/L (0 to 55), alkaline phosphatase of 348 U/L (40 to 150), gamma glutamyltransferase of 221 U/L (12 to 64), and albumin of 25 gm/L (35 to 50). The other profiles including renal, serum amylase and clotting were all normal. Viral hepatitis B, C, and HIV serologies were all non-reactive.

Ultrasound scan of the abdomen showed coarse echo-texture of liver with evidence of a focal hypoechoic nodule (5.6 cm), mixed echogenic mass in the liver, a grossly distended gall bladder with thickened wall and ascites mostly in the pelvis. Fine needle aspiration cytology of the lesion showed CHC.

His condition was later complicated by upper gastrointestinal bleeding which was shown to be a bleeding pre-pyloric ulcer at endoscopy. This was treated with adrenaline injection. Thereafter the patient's condition remained stable. Due to financial constraints, the patient decided to have further treatment in his native country. Arrangements were made for his transfer. Unfortunately, that evening he developed abdominal distension, generalised abdominal pain and shortness of breath. Repeat blood investigations showed a drop in haemoglobin and deranged clotting profile. Abdominal paracentesis was attempted with fresh frozen plasma cover. Frank blood was aspirated. His condition deteriorated rapidly. Haemoperitoneum from tumour rupture was suspected and arterial embolisation was considered. However on the basis of the patient's prior wishes and considering his poor prognosis, no further intervention was done. The patient died same the night.

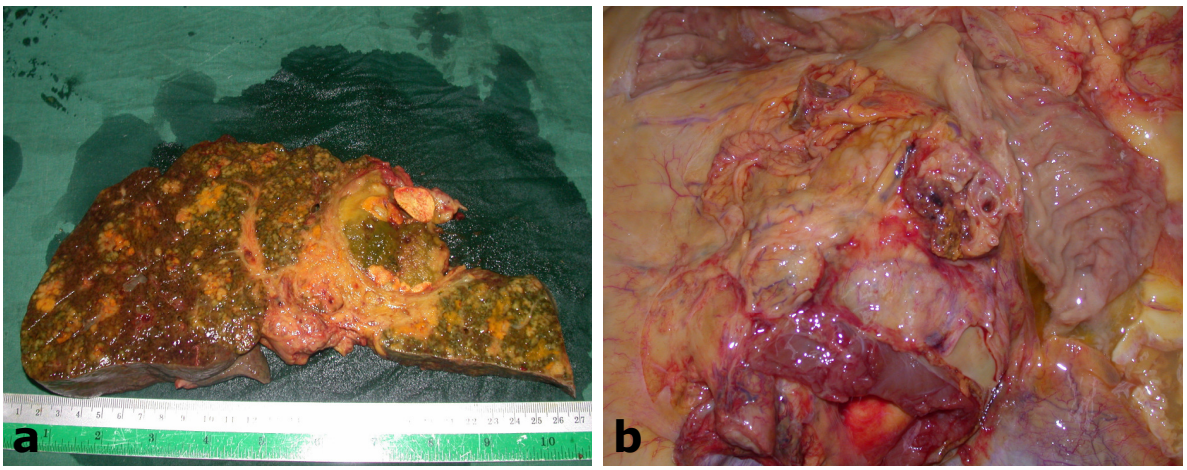

Fig. 1: Gross examination of the liver showing multiple yellowish nodules (tumours) and one large tumour with a big defect in the wall indicating site of tumour rupture, b) Dissection near the hilar region showing tumour infiltration along the biliary tree.

Autopsy showed approximately 700 ml of blood stained fluid in the abdominal cavity and multiple tumour nodules on the liver surface. There was an 8cm tumour with central necrosis and a defect on the surface side indicating the site of tumour rupture. The tumour had also extended into both main hepatic ducts and down along the common bile duct obstructing both the bile and pancreatic ducts. Microscopy showed tumour cells consistent with CHC.

DISCUSSION

Spontaneous rupture of hepatic tumour is a universally fatal complication. It is estimated to occur in three to 15% of cases, lower in the West compared to Asian countries. [5] In Asia, this is estimated to be between eight and 26%. [6, 7] In one of the largest study on HCC in the United Stated, only 1.6% of patients had intra-peritoneal bleeding that was caused by tumour rupture. [8] Additionally the average age reported in this study was older (75 to 79 years old) as compared to an Italian study (62 years). [9]

The exact mechanism of spontaneous rupture is not clear. Several hypotheses have been postulated and these include rapid tumour growth, venous hypertension, trauma or compression by the diaphragm associated with respiratory movements, coagulopathy and thrombocytopenia. [6, 10, 11] Rapid growth may lead to tumour out-growing the vascular supply resulting in tumour necrosis with subsequent intra-tumoural bleeding. HCC is a vascular tumour, receiving its blood supply mainly from the hepatic artery. Therefore, intra-tumour pressure will be high and can lead to dissection of the tissue plane. Breech of the hepatic capsule will lead to intra–peritoneal bleeding. This is currently the most accepted hypothesis. The presence of venous hypertension secondary to tumour venous invasion or thrombosis, coagulopathy and thrombocytopenia will likely increase the risk of rupture. Other factors include large tumour size, peripheral location and the extent of extra-hepatic protrusion. [6, 12] Rupture of deep tumours may be asymptomatic or produce pain while peripheral lesions will give rise to haemoperitoneum usually with peritonitis and haemodynamic instability. [13] CHC is more aggressive and this may have been contributory in our case.

Diagnosis of tumour rupture is based on symptoms, imaging studies and presence of blood-stained ascites. The most common features are abdominal pain, acute blood loss and acute shock. Other signs and symptoms include abdominal distension, hypotension, abdominal tenderness, and tachycardia. CT scan is the imaging of choice for suspected tumour rupture. However, the reported sensitivity remains suboptimal. In one study it was found that tumour rupture could only be diagnosed in 13% of the patients using CT scans and ultrasound studies. [9] Use of gray scale and Doppler ultrasonography can improve detection. [14] Presence of ascites, contrast extravasations and defect in the tumour contours are all highly suggestive of tumour rupture. Presence of the enucleation sign on helical CT may be more specific of ruptured HCC. [12]

Interestingly, HCC without rupture is also associated with blood stained ascites and is seen in approximately 33% of patients. [15] This may be due to slow oozing, probably from portal hypertension. Non-critical bloody

ascites can be differentiated from acute haemoperitoneum. In acute haemoperitoneum, the erythrocyte count is greater than 1×10^6/ mm^3 and haematocrit greater than 3%. [9]

The initial treatment of tumour rupture is to control the haemorrhage. In the 60s to 80s, surgical resections with complete removal of tumour were the mainstay of treatment. Various surgical procedures like perihepatic packing, suture plication of bleeding tumours, injection of alcohol, hepatic artery ligation and liver resection are effective against haemostasis. [16, 17] In patients with advanced disease who are acutely sick, these may not be appropriate options. Arterial embolisation is safe and effective option until patients are stable enough for surgery. [18] Transarterial Embolisation (TAE) is a palliative procedure usually done if liver functions are compromised like in Child Class C or in the case of multi-focal or bilobar HCC. [13] However it has been shown that patients with Child Class C to be associated with high post procedure mortality regardless of the regardless of treatment type. [19] There is also report of ruptured HCC successfully treated with radiofrequency ablation. [20]

In conclusion, clinicians should consider tumour rupture in patients known to have hepatic tumour who suddenly deteriorate with abdominal distension. Early diagnosis is important but prognosis remains poor in most cases due to the advanced liver disease.

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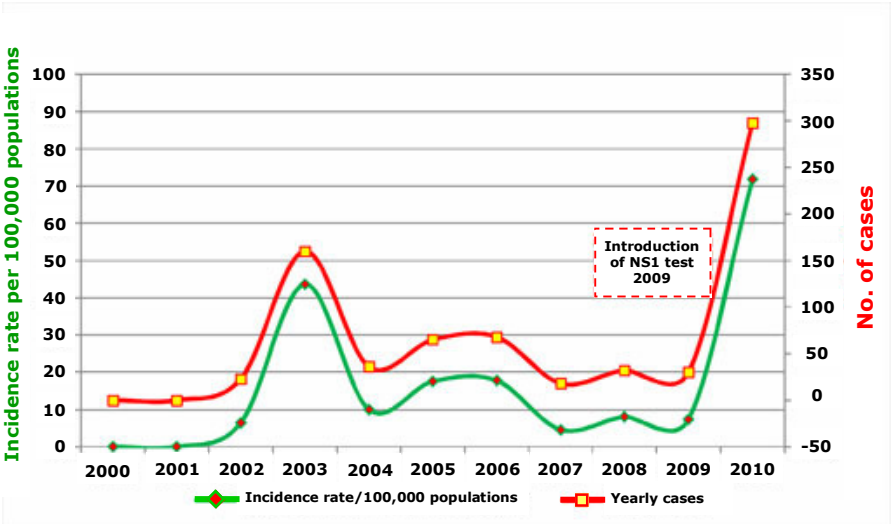
ASEAN Dengue Day
15th June 2011

- **Proposed in the 10th ASEAN Health Ministers meeting Singapore 22nd July 2010 to increase public awareness**
- **Estimated 50 millions cases worldwide annually with 75% occurring in the Southeast Asia and Western Pacific region**
- **June was selected because it is when dengue outbreaks usually peak in the ASEAN region**



Trend of dengue fever in Brunei Darussalam (2000 to 2010). (Data from Ministry of Health, Brunei Darussalam website at www.moh.gov.bn).