

Case Report

Hepatocellular Carcinoma in Sheep

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INTRODUCTION

This tumor is uncommon but found in ox, sheep and dog and less commonly in the cat, pig and horse. In Great Britain hepatocellular carcinoma (HCC) comprises 20 percent of all tumors found in slaughtered sheep. Affected animals are usually adult, though hepatoma has been found even in newborn lambs, this tumor appeared to be congenital origin but mostly described in older lambs (Molton 1978, Cotchin 1984). The incidence for this tumor is usually between 4 and 8 years in cows and over one year (often 4-5 years) in sheep (Molton 1978). In a 12 month surveys of neoplasm found in 100 abattoirs throughout Great Britain in sheep 32 of 107 tumors originated in the liver, 8 of these tumors were found in younger than one and 24 in older than one year sheep (Anderson & Sandison 1968).

The study of sheep hepatocellular carcinoma in India 2 of 408 livers from sheep aged 4-5 years showed changes associated with hepatoma (Krishna *et al* 1973). In Iran one case of hepatocellular carcinoma in a cow and cholangiocellular carcinoma in a sheep were reported (Gholami & Ezzi 2000). Hepatocellular carcinoma is one of the most common carcinoma in man (Damjanov & Linder 1996, Robbins *et al* 1984).

Keywords: Hepatocellular, Carcinoma, Metastasis, Sheep

CASE HISTORY

A 6 year old ewe with clinical signs of depression, sever weakness, anorexia and prolonged duration of disease (more aciation retention more than 2 litre clear fluid in abdominal cavity and mild generalized edema were noted. Systematic necropsy masses of grayish white color neoplasm were seen in liver and metastasis of tumors were evident on mesenteric, pharyngeal, mediastinal lymph nodes, lung, kidney and spleen (Figure 1).

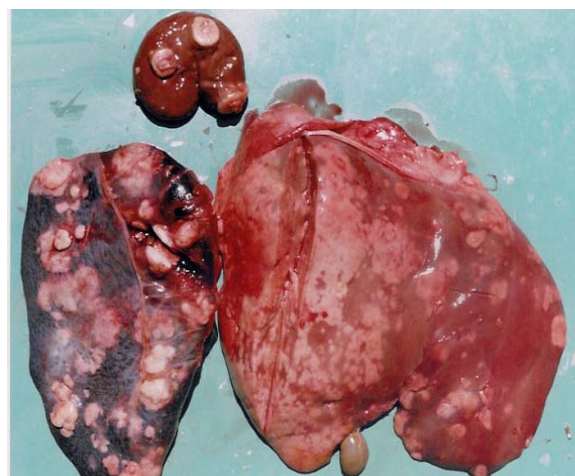


Figure1. Hepatocellular carcinoma of liver and metastasis to spleen and kidney.

The neoplasm was defined from adjacent normal tissues and soft texture. Tumor in the liver had diffused and nodular formation. The tumor almost occupied entire liver. The color of tumor in

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metastasis areas was gray to white, irregular, multinodular and variable sizes and none encapsulated with soft friable areas. Parts of tumor tissues of different organs were fixed in 10% formalin and after processing 6 micron sections were prepared from paraffin blocks and stained Hematoxylin and Eosin (H & E) method. Microscopy tumor cells were evident in metastasis areas and had invasion on the most parts of liver and sharply defined from adjacent normal tissues (Figures 2 and 3).

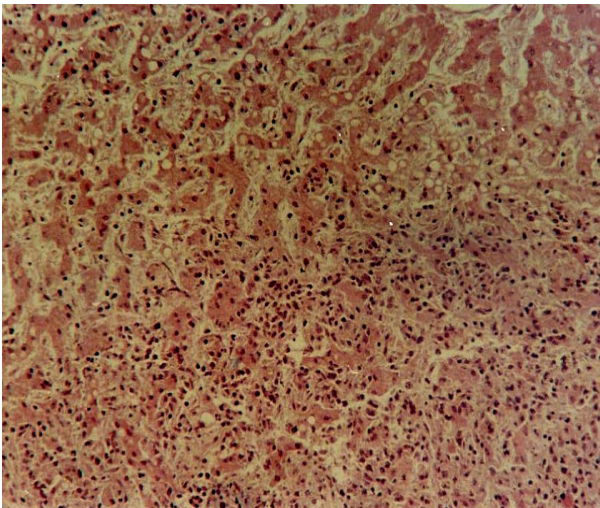


Figure 2. Liver tissue showed, border zone of carcinoma H & E, X 200

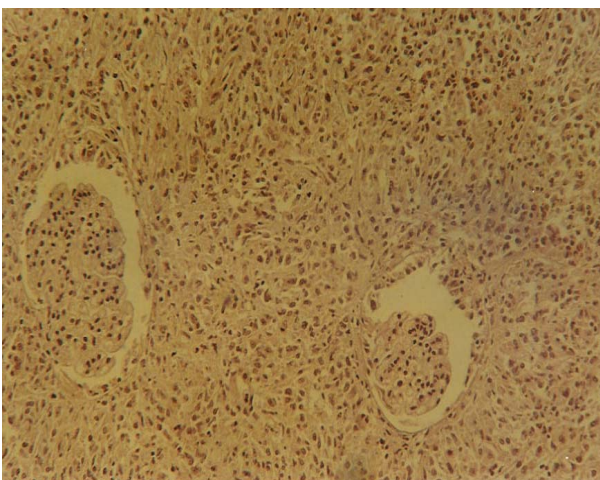


Figure 3. Metastasis of hepatocellular carcinoma in kidney tissue. H & E, X 200

Focal necrosis, hemorrhage and calcified patches and hematopoietic activity were present inside the neoplasm. The calcified patches being most marked in necrotic areas. In some areas fibro lamellar separating tumor cells from normal liver cells (Figure 4).

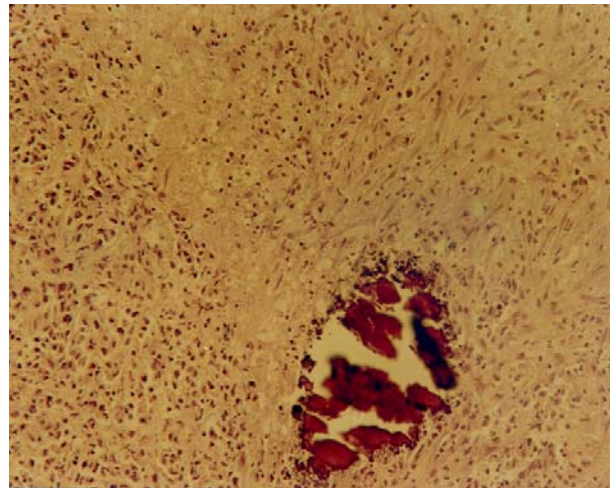


Figure 4. Calcified patch of necrotic areas and fibro lamellar tissue around the neoplastic liver cells. H & E, X 200.

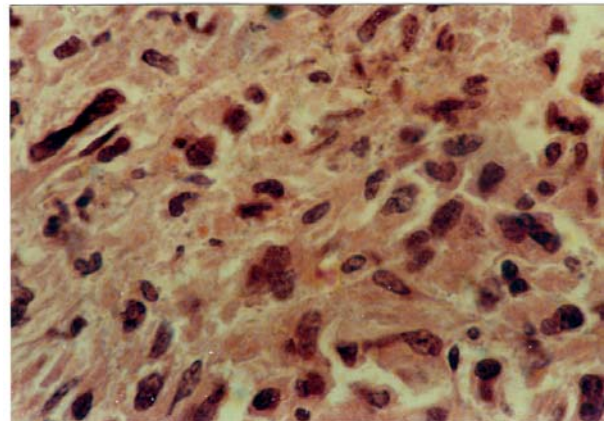


Figure 5. Hepatocellular carcinoma, poleomorphism, mitotic figures and binucleated cells were prominent. H & E, X 400

In this case tumor cells were small, variable nuclei, scanty cytoplasm and poorly differentiated. Mitotic figures and some binucleated cells were prominent (Figure 5).

DISCUSSION

Hepatocellular carcinoma occurs in several histological patterns. The degree of differentiation of tumor is variable. In general the better differentiated resemble a hepatocyte. The poorly differentiated tumor cells are smaller with more variable nuclei the tumors may be multinodular, massive or diffuse with replacement of almost the entire liver (Damjanov & Linder 1996, Molton 1978, Robbins & et al 1984). Customarily the tumor cells do not differ much from normal cells and they generally retain the cord arrangement. Malignancy in hepatocellular carcinoma is diagnosed mainly on the basis of tumor sizes and by local invasion in the absence of intrahepatic or extra hepatic metastases. In some cases emboli from intra vascular invasion establish secondaries in other parts of the liver. Extra hepatic metastasis is uncommon; it was found in 4 of 13 liver cell carcinoma of cattle and in 2 of 21 in sheep reported (Molton 1978). On the study of hepatocellular carcinoma of dog lymph nodes, lung and peritoneum were the most common sites of metastasis. The kidney adrenal gland pancreas, bone, heart and spleen were less common sites (Patnaik et al 1981). Calcified patches and hematopoietic activity in hepatocellular carcinoma of man and certain species were reported (Wettimuny 1969). This tumor with variable nuclei and invasion to entire liver and metastasis to kidney, spleen and lung resemble as poorly differentiated hepatocellular carcinoma.

Possible etiologic factors, as hereditary, parasites, plant poisons, chemical carcinogen, virus and *mycotoxins* (aflatoxin) have been implicated in the cause of hepatocellular carcinoma (Damjanov &

Linder 1996, Molton 1978, Robbins & et al 1984). Experimental studies in laboratory animals have shown that a number of chemical agents are carcinogen for the liver. Domestic animals may be exposed to some of these substances including aflatoxin, senecio alkaloids and chlorinated hydrocarbons. Aflatoxin produced as a result of contamination ground nut by *Aspergillus flavus* is a potential danger to cattle and sheep (Anderson & Sandison 1968).

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