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Short Communication

REPORT ON ADENOCARCINOMA IN HIMALAYAN BLACK BEAR (*SELENARCTOS THIBETANUS*) AT P.N.H.Z PARK, DARJEELING

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Tumors or neoplasms are pathological over growths of tissue which occur as a result of multiplication of cellular elements due to alteration of biological properties of cells of the organisms under the influence of blastomogenic factors of external and internal medium. Tumors are new and inappropriate cell growths or neoplasia. Cancer are malignant tumors that are characterized by loss of normal cellular controls that results in unregulated growths, lack of differentiation and ability to invade local tissues and metastases to other parts of the body (Dwight *et al.* 1999). Tumors are characterized by a typical structure, unlimited and uncoordinated with the body growth, persisting even after elimination of causes of their appearance. Tumors or cancerous growth can grow at any site and serves no useful function. Classification of tumors are based on different principles amongst which histological tumor classification should be considered the most acceptable one. It differentiates between epithelial, connective tissue, muscular and neural tumors. Within each of these groups, tumors are divided according to the type of tissue and maturity (differentiation) of tumors cells. Thus epithelial tumors are tumors which are classified into tumors from glandular (adenomas, adenocarcinomas) and flat epithelium (papillomas, cancroid and non- keratinizing cancer tumors). According to type of tissue (fibrous, adipose, cartilaginous, osseous), connective tissue tumors are divided into fibromas, lipomas, chondromas, osteomas. A survey work of tumours in domestic animals have been done and reported by Singh *et al.* (1997).

A Himalayan Black Bear (*Selenarctos thibetanus*) "Suri" (Home Name) aged around 4 - 5 months was caught and brought to the Padmaja Naidu Himalayan Zoological Park, Darjeeling, West Bengal in the year 1985 from a place nearby Darjeeling town from Pandam Tea Estate.

The bear was almost healthy as reported by Zoo keeper excpt occasional inappetance since 1-2 months. Suddenly it was found dead in its enclosure in the morning of 1st September, 2005. The Demise of this particular animal made us very unlucky since the oldest animal was lost. Due to its senility it used to reject its normal feed which the rest of the bears were supplied. The diet given to the sick animal were kheer (rice and milk with honey), bananas and chicken soup with chicken pieces. The bear was treated with oral vitamin B-Complex, liver tonic, digestive enzymes along with anthalmintic drug for regular deworming as suggested in other animals by some workers (Hardy 1983, Blood *et al.* 1989). There was

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no specific signs except emaciation, weakness, lethargy, difficult to move for days together. The animal showed little clinical improvement after routine treatments. On 31st August the symptoms got more pronounced and the animal was off-fed with abdominal distension . Suddenly in the next day the animal was succumbed.

During postmortem examination, the total weight of the carcass was 52 kgs. Mucous membranes were markedly icteric. The peritoneum contained 3-4 liters of yellowish ascitic fluid. A single 5 cm diameter firm mass was attached to the external surface of the liver. The liver appeared small, firm and mottled with dozens of nodular masses varying from 0.5 to 5 cm diameter disseminated over the capsular surfaces and throughout the parenchyma of all lobes (Fig.1). Tissues were collected in 10% formalin and sent for histo-pathological examination. The histo-pathological test of the nodular growth from the liver revealed microscopically that in the tumorous part, the arrangement of the lobules were altered and numerous polyhedral cells having resurfaced with the hepatic cells were seen forming acini. The cells were hyperchromatic in nature and mitotic figure were seen. And it was indistuinsable from adenocarcinoma (hepatocellular carcinoma) based on microscopic study (Vijayasarthi *et al.* 1976) .

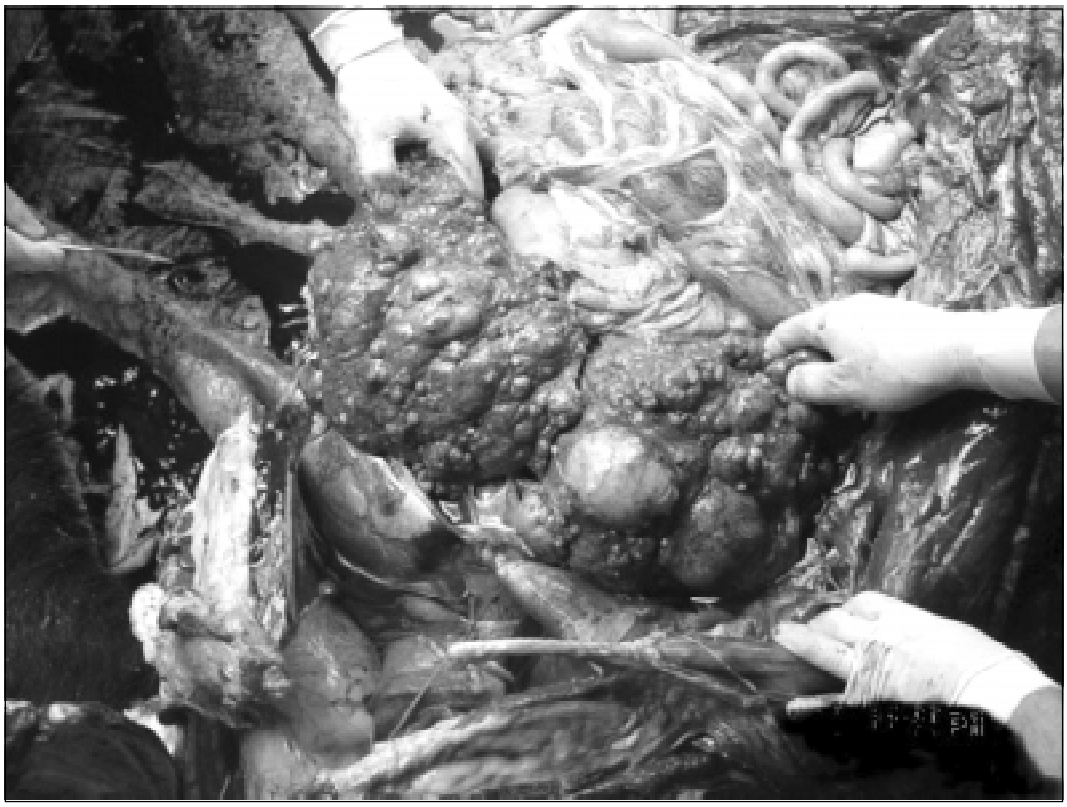

Fig. 1 : Depicts visceral surface of liver of Himalayan black bear showing additional hepatic masses.

Although bears are generally healthy and long-lived in captivity but tumors of the hepatobiliary

system have been found occationally in older stage. Biliary carcinomas have been previously reported in various species of bears including the Asian Black Bear, Sloth Bear, Malayan sun bear as well as more widely distributed Grizzly bear. Tumors of the liver , bile duct and pancreas are not uncommon in bears, particularly older animals. The exact cause of biliary and hepatocellular neoplasms in bears is not known. The prevalence of biliary tumors in captive bears may include genetic predisposition or the effects of feeding dietary components not normally eaten by these animals in the wild (Fowler *et al*. 2003).

Carcinoma has been reported in several wild animals in captivity by different works in India (Parihar *et al*. 1981, Rao *et al.* 1981, Sai *et al*. 1993). Given the relatively frequent reports of biliary carcinomas in captivity, particularly bears native to Asia, the diagnosis should be high on the differential list in adult bears that manifest clinical or clinicopathologic signs of liver or gastrointestinal disease. Although unusual in having both biliary and hepatocellular carcinomas present, does illustrate the signs, cliniciopathologic abnormalities, and gross and microscopic lesions typical for hepatic neoplasia. Additional research is needed to reveal the predisposing factors for hepatic tumor development in captive.

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