

Pathology of cholangio-hepatocellular carcinoma in a Royal Bengal Tiger (*Panthera tigris tigris*)

K. Sujatha*, Ch. Srilatha and P. Amaravathi*

Abstract

Cholangio-hepatocellular carcinoma was described in a tiger, clinically the animal was anorectic and exhibited respiratory distress few days before death. The carcass was emaciated and foul smelled serous discharges were flowing out through nostrils. Grossly the abdomen was found to be moderately distended and was filled with blood tinged serous fluid. Liver was markedly enlarged with grayish white nodules of different sizes (approximately 0.5 to 2 cms) distributed all over the surface of liver. Histopathologically, tumor masses revealed small tubules and dilated ducts traversed by dense abundant fibrous stroma. In focal areas, hepatic cells in trabecular pattern are seen with cavernous dilations lined by flattened cells. Based on the gross, histopathological and cytological findings the tumour was identified cholangio-hepatocellular carcinoma.

Keywords

Cholangio-hepatocellular carcinoma – pathology - tiger Cholangiocellular carcinoma (CCC) is a malignant neoplasm of the biliary epithelium which arises from the intrahepatic bile duct replacing the normal architecture of the organ. Hepatocellular carcinoma (HCC) is a primary liver cancer that frequently originates as a sequel to chronic liver diseases. Among animals, HCC is more common in cattle and sheep, where as in dogs and cats it occur lesser frequency than CCC (Jones *et al.* 1997). Regarding wild animals the CCC was reported in an axis deer (Singh *et al.* 1988) Reports on occurrence of tumors in wild animals are meager from India. Due to lack of sufficient information of hepatic tumors in wild carnivores, hence the present communication describes the pathological lesions of cholangio-hepatocellular carcinoma Royal Bengal tiger.

A 13 year old female Royal Bengal Tiger was submitted for PM examination by SV Zoological Park, Tirupati to Department of pathology, College of Veterinary Science, Tirupati. It was reported that the animal was anorectic since one month before death and exhibited respiratory distress few days before death. The carcass



Fig. 1: Liver was markedly enlarged with grayish white nodules on the surface.



Fig. 2: Enlarged liver with grayish white nodules of different sizes (multinodular appearance).

condition was poor and emaciated and foul smelled serous discharges were flowing out through nostrils. The postmortem of animal was conducted and tissue samples were collected processed and stain with hematoxylin and eosin (Luna 1968).

Necropsy revealed that the abdomen was found to be moderately distended and was filled with blood tinged serous fluid. Liver was markedly enlarged with grayish white nodules of different sizes (approximately 0.5 to 2 cms) distributed all over the surface of liver (multinodular appearance) (Fig.1&2). Gall bladder was empty and mucosa was thrown into folds. Lungs were

heavy and consolidated and cut surface revealed metastasized white areas and severe congestion were noticed in diaphragmatic lobe. Trachea was filled and obstructed with mucopurulent discharge. Spleen was slightly enlarged with very small sized nodular areas over the surface. Intestines showed mild catarrhal changes and

Department of Pathology, College of Veterinary Science, Sri Venkateshwara Veterinary University, Tirupati., *Department of Pathology, College of Veterinary Science, Proddatur. Email: karamalasujatha@gmail.com (corresponding author)

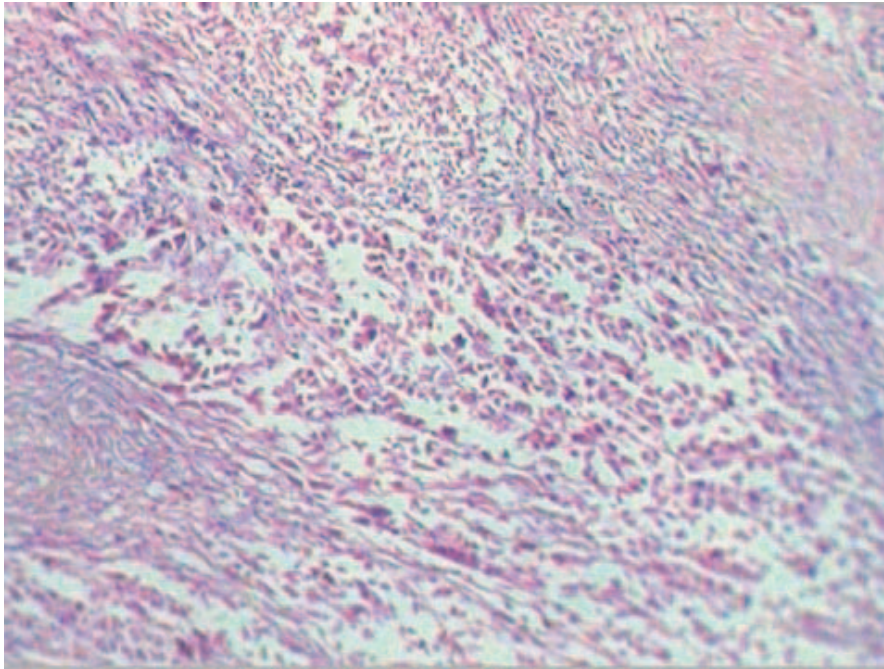


Fig. 3: Tumor masses shows small tubules and dilated ducts traversed by dense abundant fibrous stroma and ducts were partially lined with proliferating cuboidal or columnar cells. H&E x 10

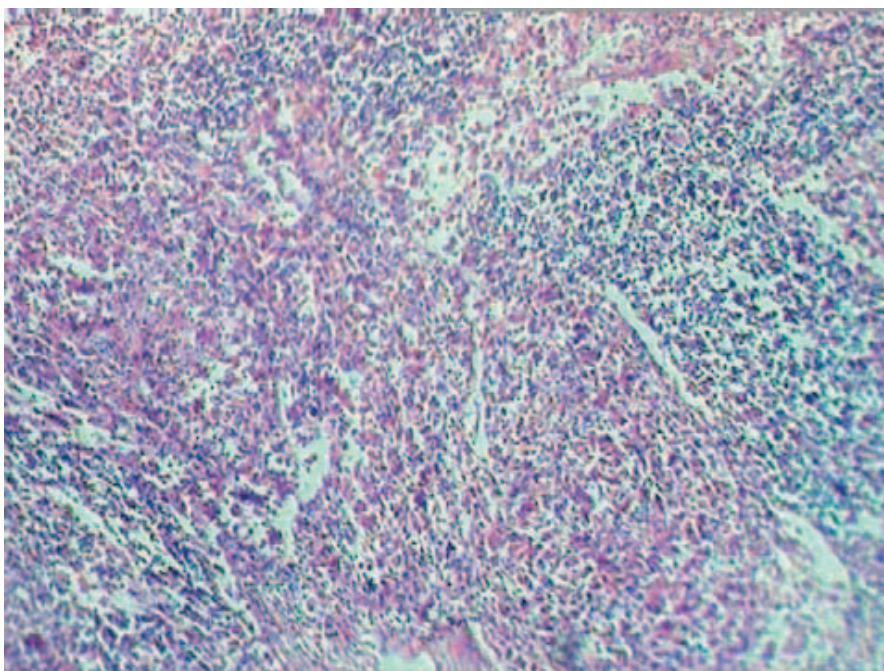


Fig. 4: Hepatic cells in trabecular pattern with cavernous dilations and lined by flattened cells. H&E x 10

mesenteric lymph nodes were enlarged and showed metastasis.

Histopathologically, tumor masses revealed small tubules and dilated ducts traversed by dense abundant fibrous stroma (Verma and Vyas, 2004) and florid deposition of collagen. The ducts were partially lined with proliferating cuboidal or columnar cells (Fig.3)(Moulton, 1978). Multiple sites of hepatic necrosis were noticed. Mitotic figures were noticed in the

neoplastic cells. In focal areas, hepatic cells in trabecular pattern are seen with cavernous dilations lined by flattened cells (Fig.4)(Selvam *et al.* 2012). Lymph node, lung and uterus also showed metastasized areas. Smears were stained with Leishmans stain and they revealed dense clusters of exfoliated cells where majority of cells which are smaller in size than neoplastic hepatocytes with variation in size of cells and nuclei having thin rim of cytoplasm were seen, and other

type of cells were large, round/polyhedral variable in size, having round or ovoid nuclei. These cells are hyperchromatic, abundant cytoplasm more basophilic than normal and contained fat droplets.

Carnivores or Wild carnivores are more prone for tumors (Rao and Acharjyo, 2002) due to their food habits. Especially in wild carnivores due to their food habits and old age predisposes the occurrence of tumors in captive animals. Reports regarding CCC in captive wild carnivores were meager. Hence present case was diagnosed based on the clinical, gross, histopathological and cytological findings it was identified as cholangio-hepatocellular carcinoma and the support was gained from the similar observations made by Ashny Ali *et al* (2011), Selvam *et al.*(2008), Moulton (1978) and Jones *et al* (1997).

Acknowledgements

The authors are thankful to S.V. Zoo Park, Tirupati for providing material.

References

- Ashny Ali, N.D., R. Nair, S. Vijayan, Pramod and Firdouz (2011).** Papillary cystic cholangiocellular carcinoma in buffalo (*Bubalus bubalis*) – a case report. *Indian J. of Vet. Pathol.* 35(2): 200-201.
- Jones, T.C., R.D. Hunt and N.W. King (1997).** *Veterinary Pathology - 6th Edition.* Williams and Wilkins, Maryland, USA, 1392pp.
- Luna, L.G. (1968).** *Manual of Histological staining methods of the Armed Forces Institute of Pathology - 3rd Edition.* McGraw – Hill Book Co., Newyork.
- Moulton, J.E. (1978).** *Tumors in domestic animals - 2nd Edition.* University of California Press, Berkeley, 443-445pp.
- Selvam, G., M. Swamy and Y. Verma (2008).** Hepatocellular carcinoma in an Indian Buffalo. *Buffalo Bulletin* 27(1): 170-172.
- Singh, C.D.N., L.N. Prasad, Alkasaran, G. Mukarjee, H.N. Thakur and L.P. Singh (1988).** A pathological study of cholangiocellular carcinoma in an axis deer. *Indian Veterinary Journal* 64:352
- Varma, Y. and U.K. Vyas (2004).** Pathological studies of cholangiocellular carcinoma in Buffalo. *Journal of Veterinary Pathology* 28:139-140.
- Rao, A.T. and L.N. Acharjyo (2002).** *Diseases of wild felids.* 1st ed. Repro print (P) Ltd, Nayapalli, Bhubaneswar.