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PATHOLOGICAL FEATURES OF CLEAR CELL CARCINOMA OF THE LUNG IN A WHITE TIGER

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ABSTRACT

Clear cell carcinoma of the lung is a very rare tumour and so far there were no reports in tigers. We report a case of clear cell carcinoma with severe angiogenesis in a 5-year-old male white tiger presenting as a reddish black coloured nodules in lungs. Cytological examination of the lung revealed the presence of numerous anaplastic clear cells with eccentrically placed nucleus. Individual neoplastic clear cells were characterized as large with relatively low nuclear/cytoplasmic ratio. The cytoplasm is abundant and vacuolated. Based on histopathological features it was identified as clear cell carcinoma

Keywords: *Clear Cell Carcinoma, White Tiger*

INTRODUCTION

Clear cell carcinoma of the lung is an extremely rare and unusual malignant neoplasm. The tumour mass was composed of clear cells with large amounts of cytoplasmic glycogen; therefore, this tumour was called as clear cell tumour. All lung carcinomas with more than 50% clear cells, despite the presence of focal glandular or squamous differentiation are presently grouped as clear cell carcinomas (Kavunkal *et al.*, 2008). Most clear cell tumours are metastases of kidney or ovarian tumours. But the primary lung clear cell tumour composed entirely of clear cells is very rare (Stopsack *et al.*, 2013). Information about this tumour in zoo felines was not found.

MATERIALS AND METHODS

In the present case, the tumour sample was procured from the post-mortem examination carried out at Sri Venkateswara Zoological Park, Tirupati. Impression smears were taken from the cut section of the tumour mass in lungs and stained with leishmans stain. The representative tissue pieces of lungs were collected and preserved in 10 per cent neutral buffered formalin for histopathological studies. The fixed tissues were processed by paraffin embedding technique. Sections of 5-6 μ thickness were cut and stained with routine Haematoxylin and Eosin method (Culling, 1974).

RESULTS AND DISCUSSION

A 5 year old male white tiger pertaining to S.V Zoological Park, Tirupati was presented for post-mortem examination with a history of dullness, pale conjunctival mucous membranes and nasal discharges. The carcass was emaciated with distended abdomen (Figure 1). At necropsy, congestion of the coronary blood vessels and petechial haemorrhages on the epicardium was found.

Lungs revealed severe congestion and the presence of elevated reddish black areas throughout the lung parenchyma (Figure 2). Cytological examination of the lung revealed the presence of more neoplastic clear cells along with few glandular cells. Individual neoplastic clear cells were characterized as large pleomorphic cells with relatively low nuclear/cytoplasmic ratio and have more nucleoli (Figure 3). The cytoplasm is abundant, and vacuolated. The clear vacuolated appearance of the cytoplasm might be due to the presence of large accumulations of glycogen which were partially removed during processing of paraffin embedded tissues and this was in accordance with the Kavunkal *et al.*, (2008) and Yamamoto *et al.*, (1993).

Histologically, the lung tissue was extensively infiltrated by the anaplastic clearcells composed of nests, sheets and focal areas of glandular structures containing polygonal cells with abundant clear cytoplasm. The similar histological features were noticed by Edwards and Carlile (1985). In addition to proliferation

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of neoplastic clear cells, numerous vascular spaces filled with blood were also noticed, indicating angiogenesis (Figure 4).

Conclusion

The present case was diagnosed as clear cell carcinoma based on cytological and the histopathological features. This is the first description of clear cell carcinoma of the lung in a white tiger. Usually, the clear cell carcinoma was not a separate entity but it may come under adenocarcinoma, squamous carcinoma and large cell undifferentiated carcinomas, so further attempts will be made to detect the types of clear cell carcinoma.



Figure 1: White Tiger: Note Emaciation with Distended Abdomen

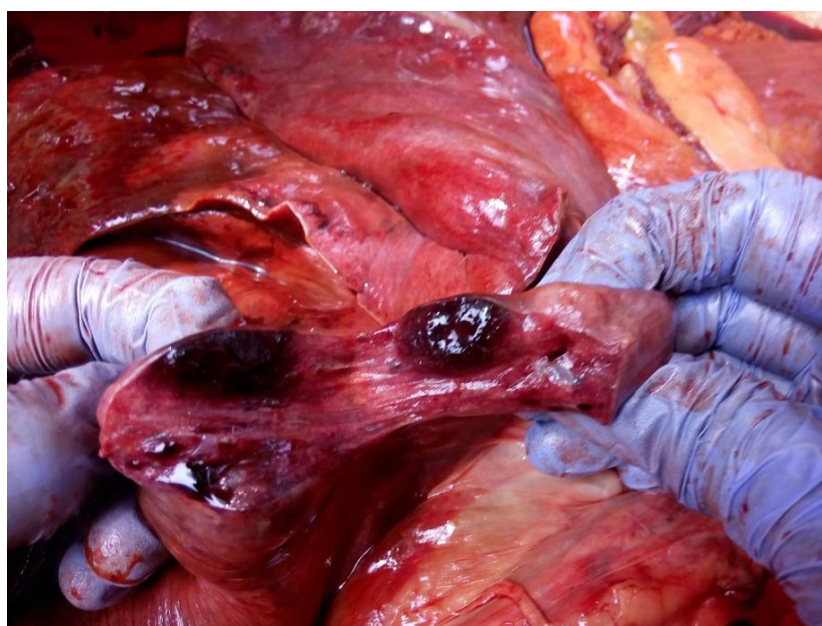


Figure 2: Cut Section of the Lung Showed Elevated Reddish Black Nodules

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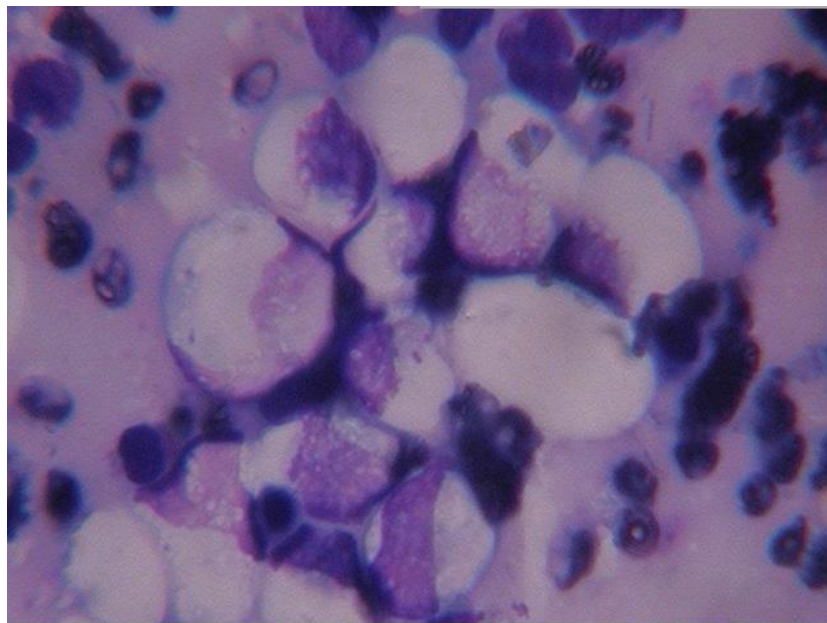


Figure 3: Note Presence of Pleomorphic Clear Cells having Eccentrically Placed Nucleus with Numerous Nucleoli and Vacuolated Cytoplasm

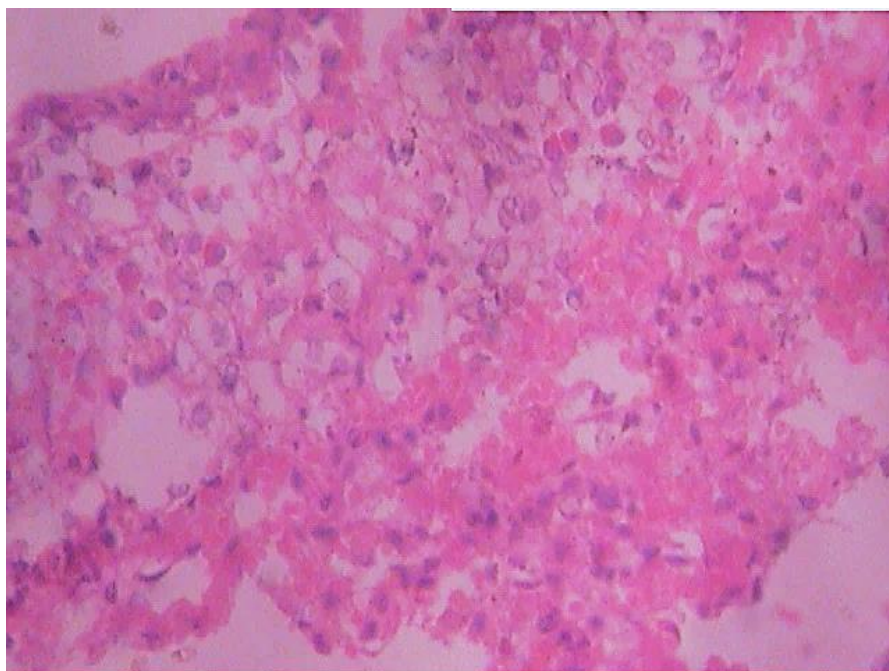


Figure 4: Note Presence of Numerous Anaplastic Clear Cells Arranged in Sheets Along with Proliferated Endothelial Cells Forming Blood Filled Vascular Spaces

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Research Article

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