

Histiocytic sarcoma in a captive hybrid orangutan (*Pongo sp.*): morphological and immunohistochemical features

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INTRODUCTION

Histiocytic sarcoma (HS) is a malignant hematopoietic tumor of histiocytic origin. It is a common neoplasm in dogs, while it is extremely rare in humans [1]. Few cases have been reported in non-human primates (NHPs) [2-4]. The diagnosis of HS is based on morphological and immunophenotypic aspects.

CASE PRESENTATION

Here we report a case of HS in a 45-year-old female hybrid orangutan (*Pongo sp.*) from an Italian zoo. The animal was severely cachectic and showed anorexia, weakness, apathy, ascites and alterations of blood parameters before death. For the serious clinical condition, it was euthanized and submitted for post-mortem examination to the Istituto Zooprofilattico Sperimentale del Lazio e della Toscana.

RESULTS

At necropsy, the liver was considerably increased in volume, pale and with numerous multifocal well circumscribed nodular structures with lardaceous aspect, ranging in size from a few mm to 4-5 cm in diameter (Figure 1A). Similar nodules were found in the spleen and in the mesentery. Microscopically, a multifocal, densely cellular, unencapsulated, poorly demarcated, infiltrating, round cell neoplasm was observed in the liver, the spleen, the pancreas, the ovary and the mesentery (Figure 1B). Neoplastic cells were spindle to round, arranged in sheets. They had moderate to abundant pale, eosinophilic cytoplasm and round to oval, or indented nuclei that contained margined chromatin and 1-2 nucleoli. The degree of anisocytosis and anisokaryosis was high and there were numerous multinucleated cells (Figure 2A). Mitotic count was high (1-2 per HPF). To determine the origin of the tumor, immunohistochemistry was performed (Table 1, Figure 2). Based on the results of IHC panel, the neoplasm was diagnosed as disseminated HS.

Antigen	Antibody	Clone	Immunoreactivity
Iba-1	rabbit pAb	N/A	+
HLA-DR	mouse mAb	TAL 1B5	+
CD204	mouse mAb	SRA-E5	-
CD163	mouse mAb	AM-3K	-
CD3	rabbit pAb	N/A	-
CD79a	mouse mAb	HM57	-
MUM-1	Mouse mAb	MUM1p	-
Ki67 *	mouse mAb	MIB-1	+
Vimentin	mouse mAb	V9	+
pan-Cytokeratin	mouse mAb	AE1/AE3	-

Table 1. Immunohistochemical staining results. *Ki67: 31% positive nuclei in 10 HPF



Figure 1. Orangutan. **A.** Liver. Multiple neoplastic nodules **B.** Mesentery. Lymphadenopathy with numerous neoplastic nodules

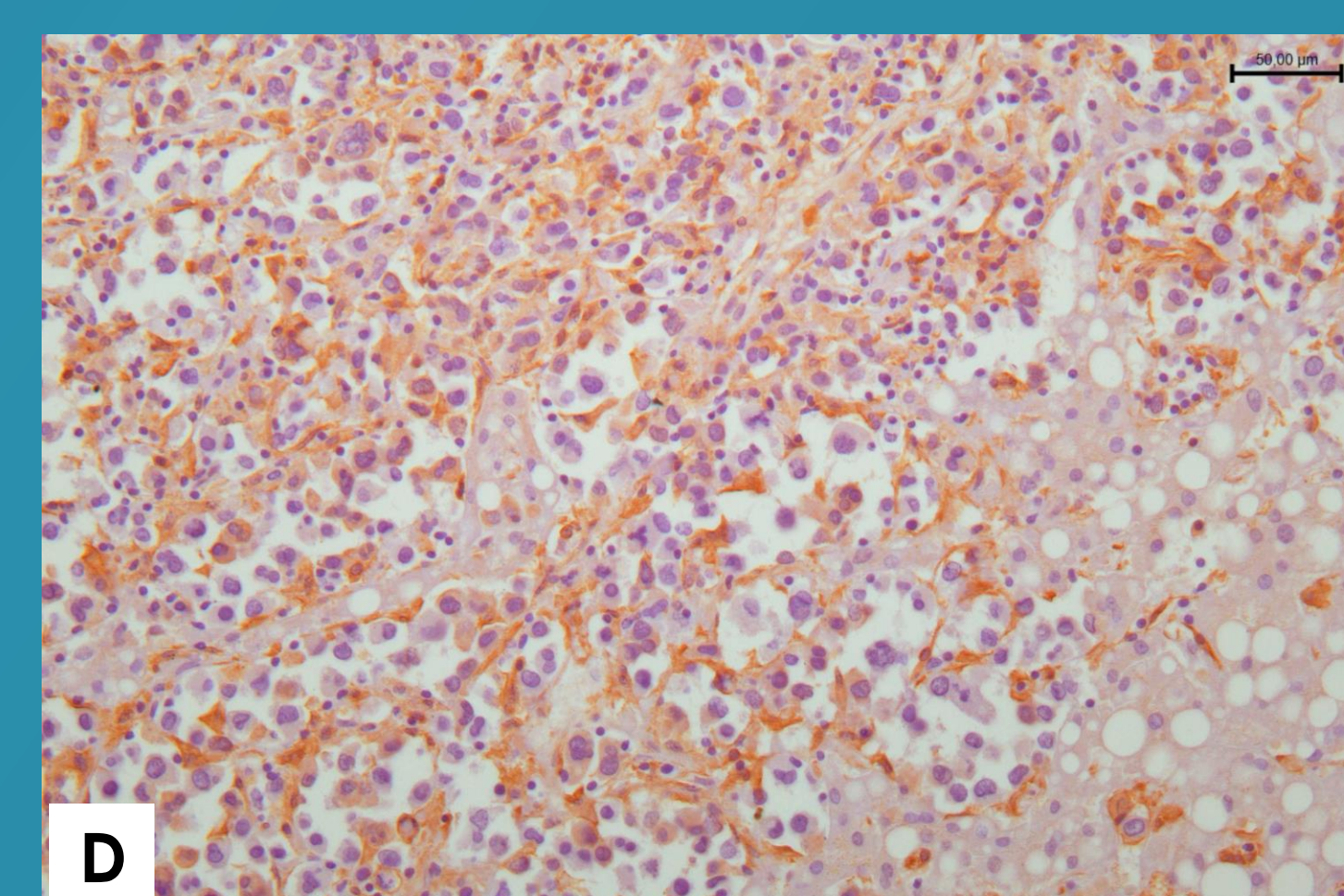
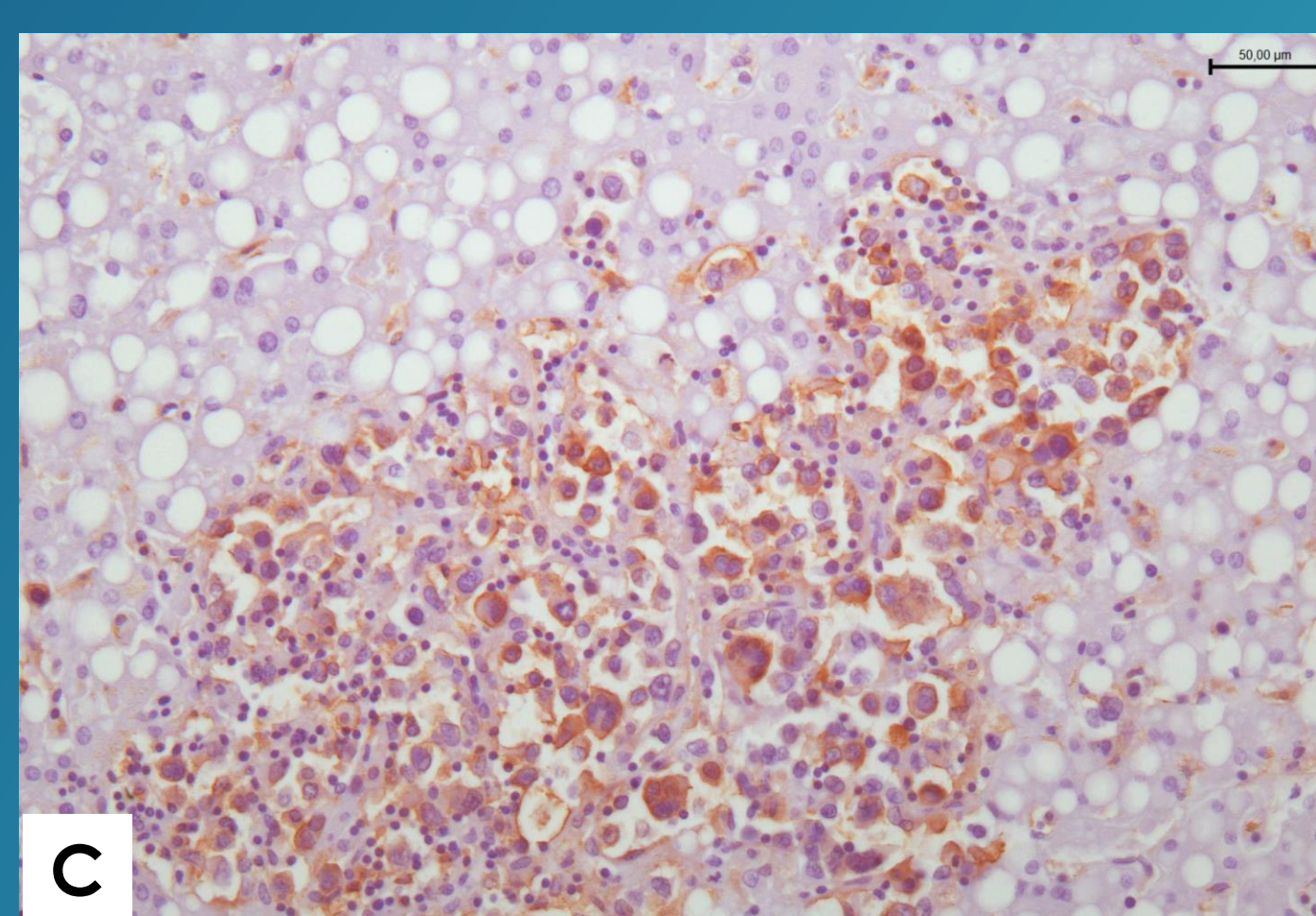
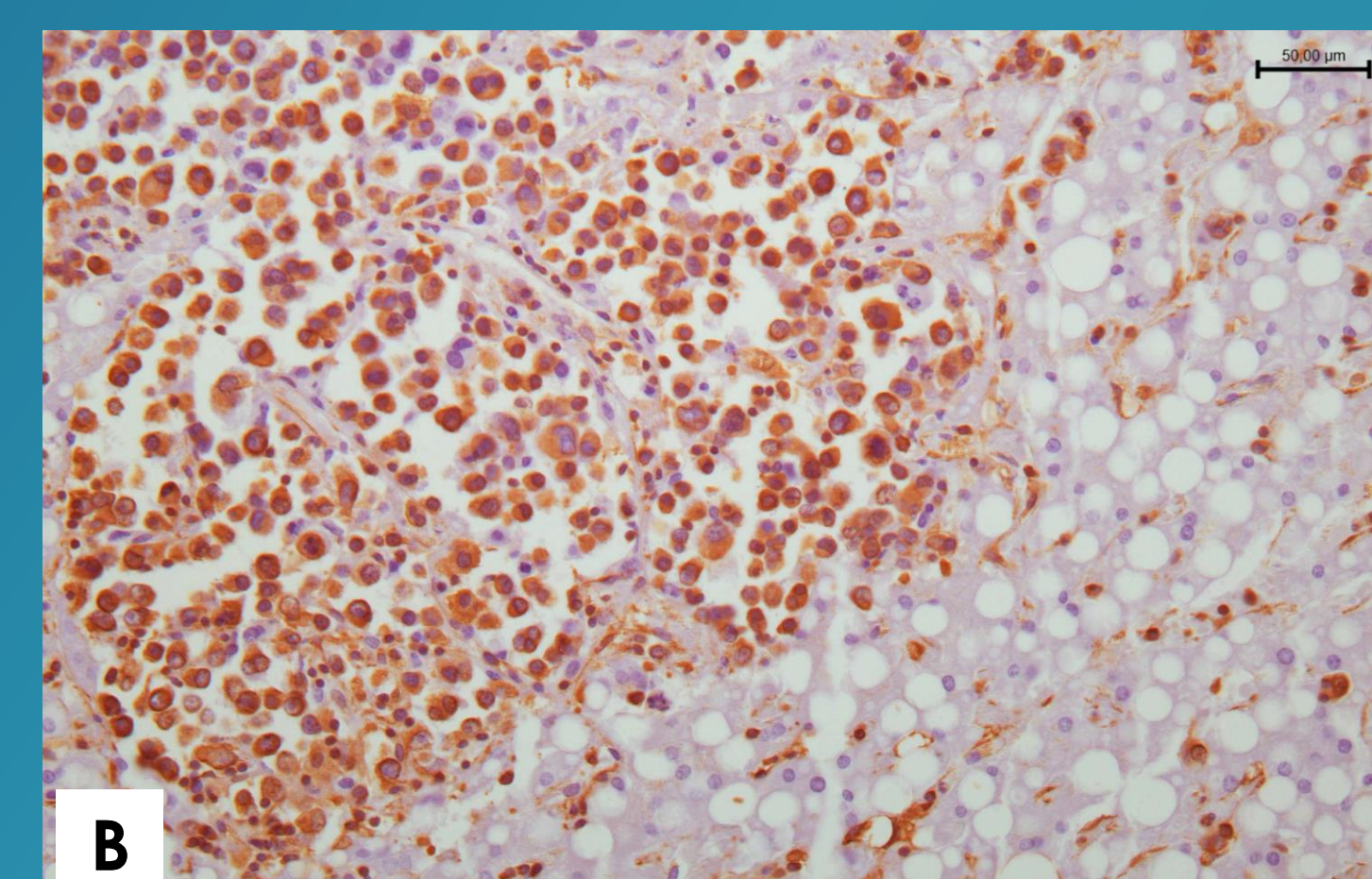
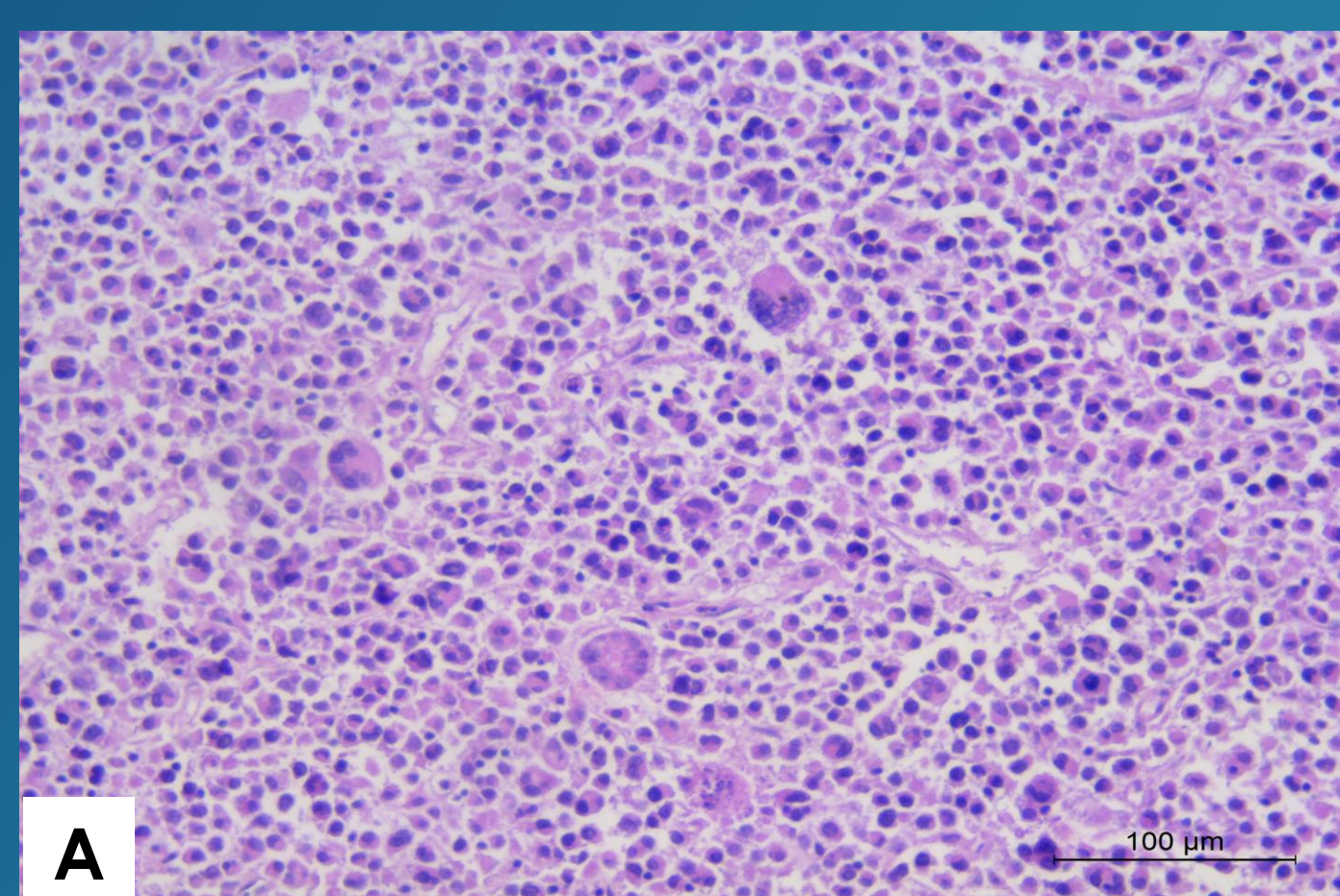


Figure 2. Orangutan. Liver. **A.** Microscopic features of histiocytic sarcoma. HE; 20x. **B.** Intense cytoplasmic expression for VIM. IHC, 20x; **C.** Intense membranous and cytoplasmic expression for HLA-DR. IHC, 20x; **D.** Moderate cytoplasmic expression of neoplastic cells, Kupffer cells and TAMs for Iba-1. IHC, 20x

DISCUSSION AND CONCLUSION

To our knowledge, this is the first case of HS in the orangutan. The morphological and immunohistochemical features found in our case are similar to HS of humans and other animals, including NHPs. Recent studies have established the role of some viruses in the oncogenesis of HS in NHPs [4]. Therefore, further tests to investigate this aspect in the current case would be interesting to carry out.

Ethical approval N.A.

References

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