

## Undifferentiated carcinoma of the pancreas in a cockatiel (*Nymphicus hollandicus*): case report

[Carcinoma indiferenciado de pâncreas em calopsitas (*Nymphicus hollandicus*): relato de caso]

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### RESUMO

O carcinoma indiferenciado de pâncreas é uma neoplasia maligna, incomum entre as espécies domésticas, especialmente em calopsitas (*Nymphicus hollandicus*), uma das aves mais populares como animal de companhia no mundo. O objetivo deste trabalho foi descrever a ocorrência de carcinoma indiferenciado de pâncreas em *Nymphicus hollandicus*. Uma ave, macho adulto, com morte natural e com aumento de volume em região abdominal, foi encaminhada para necropsia. Ao exame macroscópico foram observados mau estado corporal, cavidade celômica repleta de líquido e massa esbranquiçada aderida ao pâncreas e outra menor aderida ao duodeno. Amostras de tecidos e órgãos foram colhidas em formol 10% tamponado, processadas rotineiramente para histopatologia e coradas por hematoxilina e eosina. Na microscopia foi observada neoplasia epitelial com padrão predominantemente sólido, com invasão linfática e implantação na serosa intestinal. Com esses achados, comprovou-se a ocorrência de carcinoma indiferenciado de pâncreas em *Nymphicus hollandicus*, o qual pode ser diagnosticado por meio de histopatologia.

Palavras-chave: neoplasia pancreática, tumor epitelial, histopatologia, psitacídeo, Cacatuidae

### ABSTRACT

*Undifferentiated carcinoma of the pancreas is a malignant neoplasm that is uncommon among domestic species, especially cockatiels (Nymphicus hollandicus), one of the most popular birds kept as a pet throughout the world. The aim of this study was to describe the occurrence of an undifferentiated carcinoma in the pancreas of a cockatiel. A bird, an adult male that died naturally with swelling in the abdominal region, was referred to necropsy. Macroscopic examination showed poor body condition, the coelomic cavity filled with liquid and a white mass attached to the pancreas and other smaller masses attached to the duodenum. Tissue samples and organs were harvested and fixed in 10% buffered formalin, then routinely processed for histopathology and stained with hematoxylin and eosin. Microscopic analysis demonstrated an epithelial neoplasia with a predominantly solid pattern, lymphatic invasion and involvement of the intestinal serous membrane. These findings indicate the occurrence of an undifferentiated pancreatic carcinoma in a cockatiel that was diagnosed by histopathology.*

Keywords: pancreatic cancer, epithelial tumor, histopathology, parrot, Cacatuidae

### INTRODUCTION

The cockatiel (*Nymphicus hollandicus*) is a bird from Australia and represents the smallest species of Cacatuidae (Forshaw, 1989). The increasing worldwide popularity of cockatiels as pets has made these birds economically important. Furthermore, due to its resistance to environmental adversities and ease of breeding in captivity, the cockatiel has been regarded as a

model for psittacine studies in general (Yamamoto *et al.*, 1989). However, information on this species is fairly limited, especially with respect to diseases.

Pancreatic carcinomas are usually infiltrative, with poorly defined edges. Macroscopically, these tumors can be observed adjacent to the small intestine with infiltration and, in more severe cases, most normal pancreas architecture is lost. There may be severe adhesions

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connecting the intestines and other celomatic organs into a solid mass. Abdominal effusion is a common manifestation of this disease. Carcinomas are formed by poorly differentiated epithelial cells forming acini, nests and trabeculae, which obliterate normal pancreatic tissue and extend to adjacent tissue (Schmidt *et al.*, 2003).

Among the parrots, pancreatic tumors are most commonly seen in cockatiels (Schmidt *et al.*, 2003). However, few reports are available (Swartout and Wyman, 1987; Chen and Bartick, 2006). The objective of this study was to describe a case of undifferentiated carcinoma of the pancreas in *Nymphicus hollandicus*.

### CASUISTRY

A body of an adult male cockatiel, approximately 21 months old, that had died spontaneously was



Figure 1. Necropsy of a cockatiel. A. Note the poor body condition, with excreta stuck in the feathers around the cloaca and the coelomic cavity filled with a greenish translucent fluid. B. Whitish mass (arrow) in the pancreas and other smaller masses attached to the duodenum (arrowhead).

Upon microscopic analysis, an epithelial neoplasia with a predominantly solid pattern was observed with cells arranged in groups separated by thin fibrovascular stroma associated with central areas of necrosis (Figure 2A). Invasion of the lymphatic vessels was also noted (Figure 2B) as well as involvement of the serous membrane of the gizzard and intestine.

According to Schmidt *et al.* (2003), pancreatic carcinomas are usually infiltrative, with invasion of the adjacent small intestine. These tumors have poorly defined borders, with impaired pancreatic architecture in several cases. It is common to observe adhesions joining the

intestines and other organs in a solid mass, as well as abdominal effusion. The microscopic analysis indicated poorly differentiated epithelial cells and the formation of acinar structures, cellular nests and trabeculae extending into the adjacent tissue.

### DISCUSSION

At necropsy, a poor body condition was observed, with excreta stuck in the feathers around the cloaca. The coelomic cavity was filled with a greenish translucent fluid (Fig. 1A). A whitish mass 2.5cm in diameter was found on the pancreas and other smaller masses were attached to the duodenum (Figure 1B).

intestines and other organs in a solid mass, as well as abdominal effusion. The microscopic analysis indicated poorly differentiated epithelial cells and the formation of acinar structures, cellular nests and trabeculae extending into the adjacent tissue.

In the macaw, parrot herpesvirus type 1 (PsHV) DNA has been detected in pancreatic ductal carcinoma with metastases in the liver. However, the relationship between PsHV infection and the development of tumors has not yet been confirmed, requiring further studies (Mundhenk *et al.*, 2009). In this case, the presence of viral infection was not investigated.

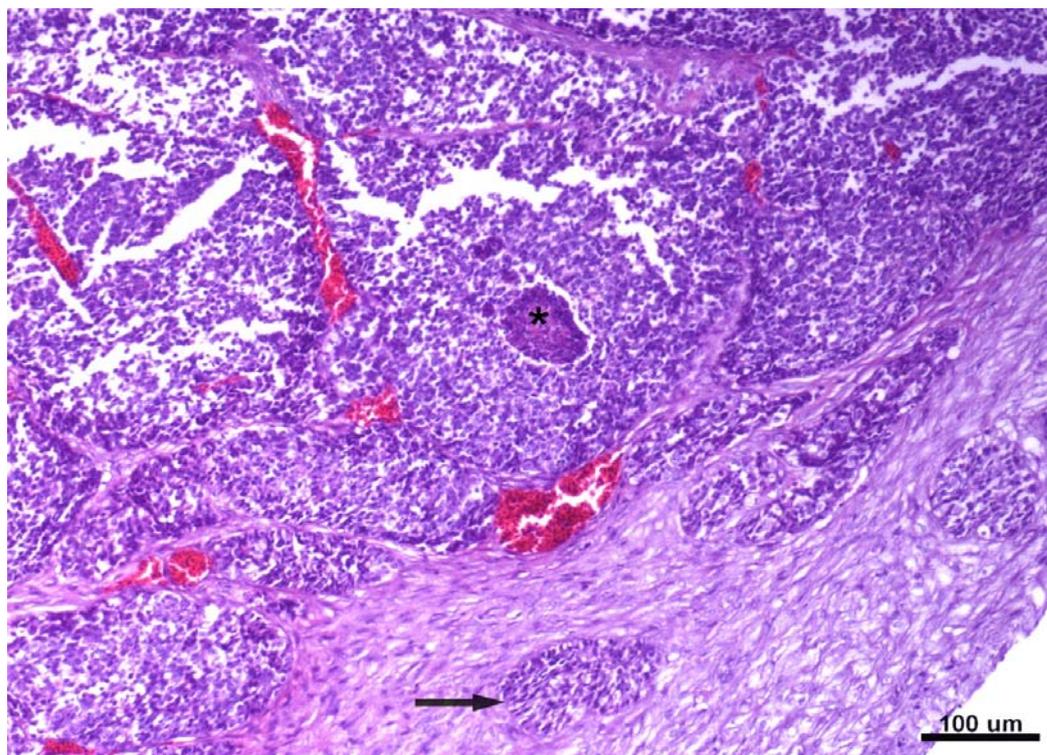


Figure 2. Histopathology of a pancreatic tumor in a cockatiel. Carcinoma with a predominantly solid pattern with cells arranged in groups separated by thin fibrovascular stroma associated with a central area of necrosis (\*) and lymphatic vessel invasion (arrow). Hematoxylin and eosin.

Reavill and Schmidt (2003) highlighted the importance of histopathology for the final diagnosis of undifferentiated carcinoma of the pancreas and a differential diagnosis of other cancers, for example ovarian, which is common in cockatiels.

### CONCLUSION

These findings confirm the occurrence of an undifferentiated carcinoma of the pancreas in a cockatiel, which was diagnosed by histopathology.

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### REFERENCES

- CHEN, S.; BARTICK, T. Resection and use of a cyclooxygenase-2 inhibitor for treatment of pancreatic adenocarcinoma in a cockatiel. *J. Am. Vet. Med. Assoc.*, v.228, p.69-73, 2006.
- FORSHAW, J.M. *Parrots of the world*. 3.ed. New South Wales: Landsdowne Press, 1989. 672p.
- MUNDHENK, L.; MÜLLER, K. *et al.* Psittacid herpesvirus DNA in a pancreatic duct carcinoma in a macaw. *Vet. Rec.*, v.164, p.306-308, 2009.
- REAVILL, D.; SCHMIDT, R. Tumors of the psittacine ovary and oviduct: 37 cases. *Proc. Annu. Conf. Assoc. Avian Vet.*, p.67-69, 2003.
- SCHMIDT, R.E.; REAVILL, D.R.; PHALEN, D.N. Gastrointestinal system and pancreas. In: *Pathology of pet and aviary birds*. [Hoboken]: Blackwell Publishing Company, 2003.
- SWARTOUT, M.S.; WYMAN, M. Pancreatic carcinoma in a cockatiel. *J. Am. Vet. Med. Assoc.*, v.191, p.451-452, 1987.
- YAMAMOTO, J.T.; SHIELDS, K.M.; MILLAM, J.R. *et al.* Reproductive activity of force-paired cockatiels (*Nymphicus hollandicus*). *Auk*, v.106, p.86-93, 1989.