J. Comp. Path. 2016, Vol. ■, 1–4

Available online at www.sciencedirect.com

ScienceDirect

ELSEVIER

www.elsevier.com/locate/jcpa

NEOPLASTIC DISEASE

Multiple Cutaneous Metastasis of a Malignant Leydig Cell Tumour in a Dog

A. Canadas*, P. Romão† and F. Gärtner*,‡,§

** Pathology and Immunology Department, Institute of Biomedical Sciences Abel Salazar, ICBAS-UP, University of Porto, † Romão Veterinários, Small Animal Clinic, Vila Nova de Famalicão, ‡ Institute of Molecular Pathology and Immunology of the University of Porto (IPATIMUP), Porto and § Instituto de Investigação e Inovação em Saúde da Universidade do Porto (i3S), Porto, Portugal*

Summary

A testicular Leydig cell tumour associated with metastatic disease is reported in a dog. An enlarged testis and three cutaneous nodules resected from an 11-year-old golden retriever were submitted for histopathological examination. Both testicular and cutaneous lesions showed identical morphological and cytological changes. Immunohistochemical labelling for expression of inhibin-α and calretinin confirmed the Leydig origin of the cutaneous neoplastic population. Based on the morphological and immunohistochemical findings, a final diagnosis of multiple cutaneous metastasis of a malignant testicular Leydig cell tumour was made.

Keywords: dog; immunohistochemistry; Leydig cell tumour; metastasis

Testicular neoplasia is common in old dogs and the most common neoplasms are seminomas and Sertoli and Leydig (interstitial) cell tumours (Kennedy *et al*., 1998; Maclachlan and Kennedy, 2002). The majority of these tumours have benign behaviour, with metastasis being described rarely (Kennedy *et al*., 1998). In human medicine, immunohistochemistry (IHC) is currently included in the routine diagnostic protocol for testicular tumours in order to differentiate cases with borderline morphology (Ulbright *et al*., 2014). Recently, it has been also suggested that IHC could be an important tool for the evaluation of canine testicular tumours (Ciaputa *et al*., 2014).

An 11-year-old, entire male golden retriever was presented with an enlarged testis and three cutaneous nodules located in the interscapular area and on the cranial dorsum. On physical examination the animal was in good body condition. Haematological analysis, serum biochemical analysis and abdominal ultrasonography were unremarkable.

The enlarged testis and the cutaneous nodules were removed surgically and submitted for histopathological examination. Gross examination of the testis revealed a protruding and coalescing multinodular lesion causing marked enlargement and distortion of the testis. The cut surface showed replacement of testicular parenchyma by a mass, composed of white to tan, soft tissue with red–brown friable foci. Macroscopically, the cutaneous lesions were similar, with an exophytic presentation and well-defined margins, measuring between 1.4 cm and 4.8 cm in diameter. One of the lesions was extensively ulcerated. The cut surface showed red–brown soft to friable tissue.

Samples of the testicular and cutaneous lesions were processed routinely and embedded in paraffin wax. Sections were stained with haematoxylin and eosin (HE). Microscopical evaluation revealed multiple non-encapsulated and coalescing neoplastic masses composed of solid sheets or cords of cells, frequently arranged radially around blood vessels or

Correspondence to: F. Gärtner (e-mail: fgartner@ipatimup.pt).

0021-9975/$ - see front matter
http://dx.doi.org/10.1016/j.jcpa.2016.05.012

in a rosette formation, supported by fine stroma of connective tissue (Figs. 1 and 2). Numerous cysts, lined by neoplastic cells and filled by proteinaceous fluid and erythrocytes ('angiomatoid' areas), were observed, especially in the testicular tumour. Haemorrhagic and necrotic areas were also identified. Neoplastic cells were of variable size with a polygonal, round, cuboidal to columnar morphology, and with small, round to oval, hyperchromatic nuclei and single, prominent nucleoli. Granular content and lipid vacuoles were often observed in the cytoplasm (Figs. 1 and 2). Mitotic figures, including atypical forms, were identified in all of the lesions, with vascular invasion present in multiples areas of the testicular tumour.

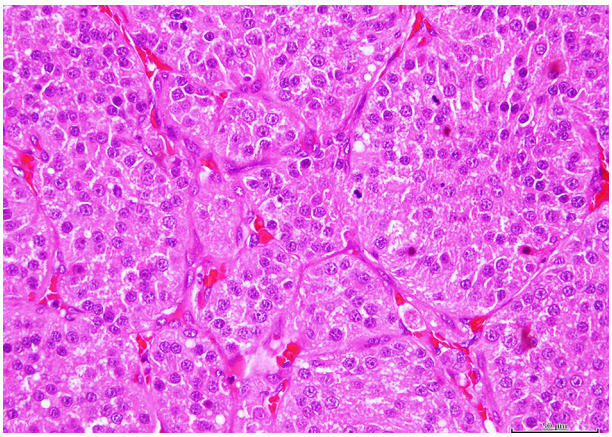

Fig. 1. Testicular tumour showing a solid-diffuse pattern of growth of round to polyhedral cells with abundant eosinophilic granular to vacuolar (lipid-like content) cytoplasm. Mitotic figures are common. HE. Bar, 50 μm.

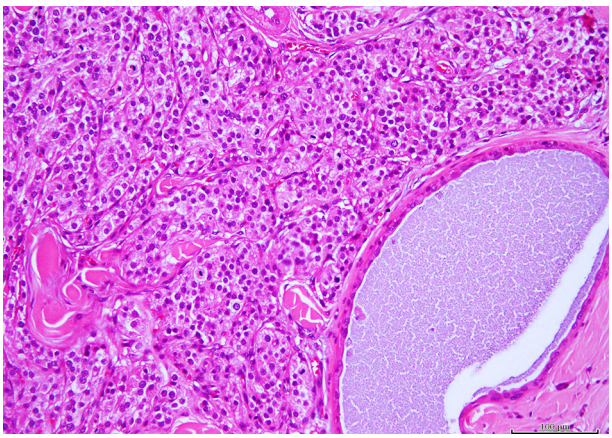

Fig. 2. Cutaneous metastasis showing a solid-diffuse pattern of growth of neoplastic cells resembling interstitial cells. Mitotic figures are common. A portion of a dilated apocrine sweat gland is present on the right side of the image. HE. Bar, 100 μm.

According to the official classification (Kennedy *et al.*, 1998), the testicular tumour was diagnosed as a malignant Leydig cell tumour (LCT) with both solid and cystic-vascular pattern. Considering that both the testicular and cutaneous lesions had the same morphological pattern and cytological characteristics, a presumptive diagnosis of cutaneous metastasis from a malignant LCT was made. To further confirm this, IHC was performed using reagents specific for pancytokeratin (clone AE1/AE3; Zymed, San Francisco, California, USA), vimentin (clone V9, 1 in 500 dilution; Dako, Glostrup, Denmark), inhibin (INH)-α (mouse anti-human monoclonal, clone R1, 1 in 50 dilution; AbD Serotec, Raleigh, North Carolina, USA) and calretinin (anti-human polyclonal, 1 in 20 dilution; Invitrogen, Fredericks, Maryland, USA). Positive (normal testis) and negative controls (tumour sections omitting the primary antibody) were included. Antigen retrieval was performed by water bath with Target Retrieval Solution™ (Dako). A peroxidase–3,3′ diaminobenzidine detection system (NovoLink Polymer Detection System, Leica, Newcastle, UK) was used to demonstrate the immunological reaction.

The testicular and cutaneous neoplastic cells were diffusely and intensively labelled for expression of pancytokeratin and vimentin. In normal testis, strong and consistently positive cytoplasmic immunoreactivity to INH-α was observed in Leydig cells, with some Sertoli cells having moderate expression of this marker (data not shown). Testicular LCT had strong and uniform INH-α expression within the cytoplasm of all neoplastic cells (Fig. 3). Similarly, intense and diffuse cytoplasmic immunoreactivity was detected in the neoplastic cells of the cutaneous lesions (Fig. 4). Expression of calretinin was moderate to

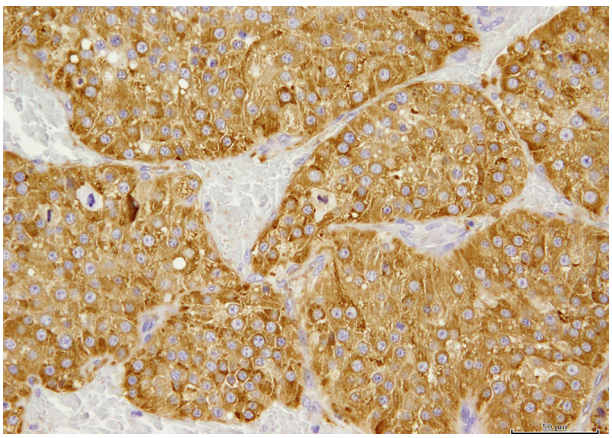

Fig. 3. Neoplastic cells from testicular Leydig cell tumour. INH-α labelling showing strong cytoplasmic immunoreactivity. IHC. Bar, 50 μm.

Please cite this article in press as: Canadas A, et al., Multiple Cutaneous Metastasis of a Malignant Leydig Cell Tumour in a Dog, Journal of Comparative Pathology (2016), http://dx.doi.org/10.1016/j.jcpa.2016.05.012