

Case report

PATHOMORPHOLOGICAL AND IMMUNOHISTOCHEMICAL FINDINGS IN A CASE OF EXTRAGENITAL CANINE TRANSMISSIBLE VENEREAL TUMOUR

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Summary

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An extragenital canine transmissible venereal tumour was described pathomorphologically and immunohistochemically in the nasal sinus of a 7-year-old female German Shepherd dog. The tumour removed from the nasal sinus weighed 45 g and was multilobullary, firm in consistency, with grayish-white colour. Histopathologically, ovoid- or round-shaped neoplastic cells with prominent, clear, large, round to ovoid hyperchromatic nuclei were seen. In general the cells were with a less dense distinct cytoplasm, solid or in cords. Immunohistochemically, positive reactions in tumour cells were detected by p53 protein, vimentin and α_1 chymotrypsin antibodies.

Key words: canine transmissible venereal tumour, immunohistochemistry, nasal sinus, pathomorphology

Canine transmissible venereal tumours (CTVT; transmissible venereal sarcoma; Sticker's sarcoma) are highly contagious round cell tumours of unknown origin encountered in both genders. They are occasionally seen in dogs kept as companions but are also observed in other canidae as foxes, jackals, coyotes and wolves. CTVT is endemic in Asia, Europe and America, despite of having a wide geographic distribution including tropical and subtropical regions. Moreover, it is widespread within large uncontrolled dog populations. It is transmitted from genitals of either the female or male during coitus.

Although the tumour affects primarily the genital mucosa, it can be rarely seen to metastasize in the nasal or oral cavities and mucosa, skin, lymph nodes, conjunctivae and lips. The tumour is spread by sniffing or licking between dogs and thus may be localized in other tissues and organs (tonsils, liver, spleen, kidney, pancreas, lung) (Schlafer & Miller, 2007, Goldschmidt & Hendrick, 2002; Erer & Kiran, 2000).

A 7-year-old female German Shepherd dog was presented with dyspnea and bleeding from the nasal cavity. The mass developed in the nasal sinus was ex-

mined and removed under general anaesthesia in the Department of Surgery, Faculty of Veterinary Medicine, Ankara University, on owner's request. The biopsy was sent to the Department of Pathology for examination. The tumour was diagnosed as CTVT after routine pathomorphological evaluations and differentiation by special staining methods.

After macroscopical examinations, the tissue specimens were fixed in 10% formalin, processed routinely and embedded in paraffin. Paraffin blocks were sectioned at 5 μ m and stained with haematoxylin/eosin (H/E), Masson's trichrome and toluidine blue staining methods to differentiate the finding from round cell tumours.

Immunohistochemical staining was performed with the avidin-biotin complex peroxidase (ABC-P) method using p53 protein (PAb240, DAKO), vimentin antibody (M7020, DAKO) and α_1 chymotrypsin antibody (A0022, DAKO) as primary antibodies and avidin-biotin peroxidase complex kit (LSAB kit, Dako, Carpinteria, USA). As chromogen, 3-aminoethyl carbazole (AEC, Dako) was used, as well as Mayer's haematoxylin for counterstaining. The slides were evaluated under light microscope (Leica, DM 4000 B).



Fig. 1. Macroscopical appearance of the mass.

The mass weighed 45 g, had a firm consistency, grayish-white colour and was multilobular (Fig. 1). The cut section was lobular, grayish-red and with haemorrhagic foci.

Microscopically, solid areas included oval- to round-shaped cells with prominent, hyperchromatic nuclei, some of which showing mitotic figures. In general, the tumour cells were separated by thin fibrous septa (Fig. 2). Necrosis, hyperaemic capillaries and mononuclear cell infiltrations accompanied the neoplastic

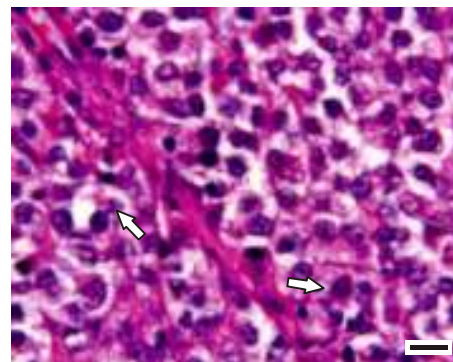
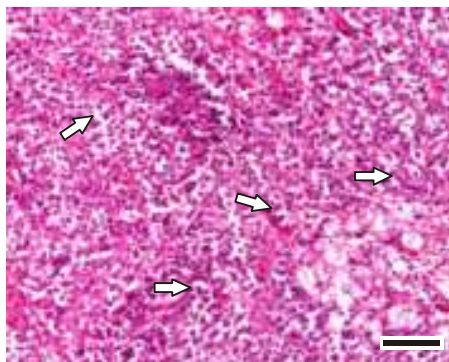


Fig. 2. Pleomorphic neoplastic cells (arrow) separated by fibrous septa H/E, bars = 75 μ m (left) and 30 μ m (right).

cells. Masson's trichrome helped the differentiation between fibrous stroma and neoplastic cells. Toluidine blue staining was used to differentiate especially from mast cell tumour between round cell tumours (Fig. 3). The ABC-P staining method was used for evaluation of nuclear and cytoplasmic activation in CTVT. Positiveness was determined by vimentin antibody in the cytoplasm of numerous neoplastic cells (Fig. 4). A more obvious positive reaction, common for both nuclei and cytoplasm of most areas, was detected with α_1 chymotrypsin and p53 protein (Fig. 5, 6).

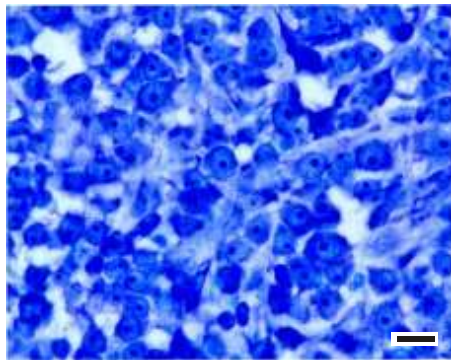


Fig. 3. No staining in CTVT cells for differential diagnosis (arrow), Toluidine blue, bar=20 μ m.

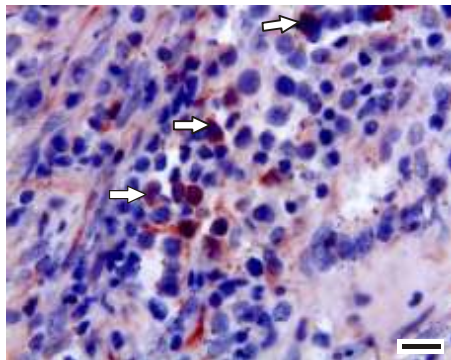


Fig. 4. Positive reaction with vimentin in cytoplasm (arrows) of neoplastic cells, ABC-P, bar=35 μ m.

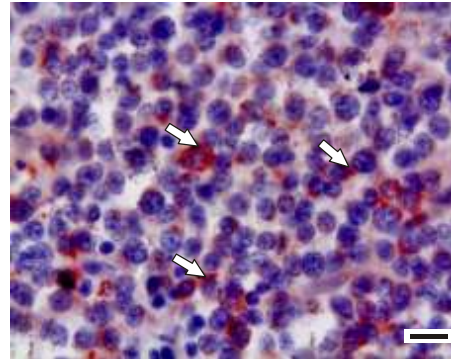


Fig. 5. Positive reaction with α_1 chymotrypsin antibody in both nuclei and cytoplasm in neoplastic cells (arrows), ABC-P; bar=30 μ m.

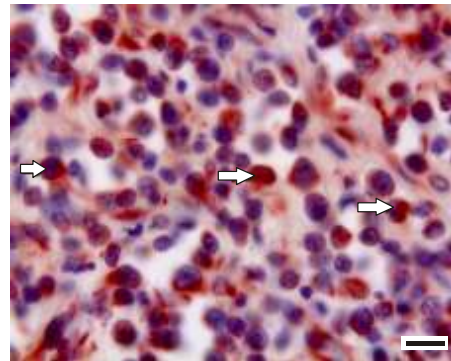


Fig. 6. A positive reaction in neoplastic cells' nuclei with p53 antibody, ABC-P, bar=16 μ m.

The canine transmissible venereal tumour is generally evaluated as round cell tumours (such as lymphosarcoma, histiocytoma, mast cell tumour etc.) due to the similar microscopical appearance. It is more common in regions inhabited by large stray dog populations that are undercontrolled and not spayed or neutered due to transmission via coitus. Metastases occur primarily to lymph nodes, oviduct, uterus, cervix, peritoneum, liver, pancreas, kidneys, lungs, pituitary gland and brain, but is rarely seen in other organs (Prier & Brodey, 1963; Meleod & Lewis, 1972; Oduye *et al.*, 1973; Adams & Slaughter, 1970; Perez *et al.*, 1998;

Yang, 1988; Erer & Kiran, 2000; Ferreira *et al.*, 2000). In this case, the tumour was determined in the nasal sinus. Macroscopically, the tumours have highly fragile consistency and cauliflower or papillary appearance. Sizes of the mass varied from 0.5 to 10 cm (Erer & Kiran, 2000; Goldschmidt & Hendrick, 2002; Schlafer & Miller, 2007).

Histopathologically, highly mitotic activity, polychromasia and abundant cytoplasm in pleomorphic neoplastic cells were observed. The cells were separated into cell islands via thin fibrous tissue and this is a typical feature of tumours (McEntee & Nielsen, 1976; Erer & Kiran, 2000; Goldschmidt & Hendrick, 2002; Schlafer & Miller, 2007). These findings are similar to ours. Immunohistochemical evaluation is very useful for CTVT identification. Mozos *et al.* (1996) and Marchal *et al.*, (1997) reported positive reaction with anti-ACM1, lysozyme and vimentin sera, although Silveira *et al.* (2008) found anti CD₃⁺, CD₇₉⁺, CD₄⁺, CD₈⁺, TGF- β . However, the method proved very useful for the evaluation of anaplastic features by using α_1 chymotrypsin antibody (for both nuclei and cytoplasm), vimentin antibody (for cytoplasm) and p53 protein (for nuclei).

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