Case report

PATHOMORPHOLOGICAL AND IMMUNOHISTOCHEMICAL FINDINGS IN AN EXTRAMEDULLARY PLASMA CELL TUMOUR IN DOG’S RECTUM

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Summary

The pathomorphological and immunohistochemical findings of a malignant plasma cell tumour in the rectum of a 12-years old, male Terrier dog are described. Microscopically, neoplastic plasma cells and plasmablasts were detected with hematoxylin-eosin and methyl green pyronin staining methods for nuclear activity. Immunohistochemically, mild positiveness in nuclei was obtained with p53 and p63 markers. Plasma cell tumour was considered to be highly malignant according to obtained results from different pathological methods.

Key words: dog, immunohistochemistry, pathomorphology, plasma cell tumor, rectum

Extramedullary plasma cell tumours (EMPT), also called plasmacytomas, are more common in dogs than in cats (Rakić et al., 1989; Head et al., 2002; Rannau et al., 2009). They account for 2.4% from all tumours in dogs (Trevor et al., 1993; Caruso et al., 2003; Kupanoff et al., 2006) and are often encountered in dogs over 3 years of age (Head et al., 2002). Most commonly affected breeds are the American Cocker, the Spanish Cocker, and Terriers (Vail, 2007). EMPT is localized in the alimentary system, especially in the stomach and guts in humans. The tumour is found as single or multiple masses commonly seen in the large intestine in dogs (Ramos-Vara et al., 1998).

The neoplastic cells are large, round and ovoid in shape. Nuclei are eccentrically placed, with “clockface” appearance (Arai et al., 1983). Plasmacytomas can be found in skin, mucosa besides at brain stem, spinal cords, lymph nodes and abdominal viscera (Jacobs et al., 2002; Vail, 2007).

The dog, 12-year-old, male Terrier, was referred to the clinic with swelling and impaired defecation complaints. The mass with a part of rectum was surgically removed. The biopsy was submitted to the Department of Pathology, Faculty of Veterinary Medicine in Ankara University for diagnosis. Macroscopical findings were noted. The samples were fixed in 10%
formalin and embedded in paraffin. Sections were cut at 5 μm thickness and stained routinely with haematoxylin-eosin (H&E). Then, methyl green pyronin (MGP) was applied for plasma cell staining. Immunohistochemically, positiveness in avidin-biotin complex peroxidase method (ABC-P) was obtained by using primary antibodies (monoclonal mouse anti targeted p53 and monoclonal rabbit anti human p63) and ABC kit (Dako, Carpinteria, USA). For revealing reaction, aminoethyl carbazole (AEC, Dako) was used as chromogen. The Mayer’s haematoxylin was preferred for counterstaining. Sections were mounted with permanounting medium and were evaluated under light microscope (Leica, DM 4000 B).

Macroscopically, the mass weighed 1 g and its diameter was 1.5 cm. It had a firm consistency and yellowish colour. Cut section was no excessive (Fig. 1).

Microscopically, numerous anaplastic plasma cells and plasmablasts were observed from propria mucosa into muscle bundles of tunica muscularis and serosa (Fig. 2). The anaplastic cells were round to oval in shape, with prominent cytoplasm and nuclei, because of mitotic activity (Fig. 3). The cells were separated by fine fibrous trabeculae in some areas.

Also, mononuclear cell infiltrations composed of macrophages and lymphocytes were seen multifocally in mucosal propria. In MGP staining, the nuclear activity of anaplastic cells was clearly seen. The nuclei were stained in light green in spite of pink in cytoplasms (Fig. 4). Immunohistochemically, a mild positiveness was detected in most nuclei of plasma cells and plasmablasts with anti p53 primer sera compared to anti p63 primer sera (Fig. 5 and 6).
In this clinical case, only one mass originating from rectum was observed in the dog. Histopathologically, cytoplasmic granules, haemosiderin, amyloid deposits and hyalinosis are sometimes reported to be found in plasma cell tumours (Arai et al., 1983; Ramos-Vara et al., 1998; Caruso et al., 2003; Rannau et al., 2009). However, such findings were not present in this case. The neoplastic cells were generally composed of eccentrically localized, large, round to ovaly shaped, clock face patterned nuclei, some of which with binucleated and highly mitotic figures (Arai et al., 1983). The other histological features of this neoplasm were described as separate to small groups of pleomorphic neoplastic cells by thin fibrous tissue (Caruso et al., 2003). The findings in this case were similar to other reported findings and invaded the rectal muscle bundles. Ramos-Vara et al., (1998) mentioned plasmacytoid giant cells 13–40 μm in diameter with one or multiple nuclei scattered in a common cytoplasm. Similar giant cells were present in some areas in this case. Arai et al., (1983) did not report inflammatory cells including lymphocytes, macrophages and granulocytes. However, contrary to what is documented in previous reports, in this case mononuclear cell infiltrations were encountered in mucosal propria.

Anaplastic features, especially nuclear activity, were evaluated in both H&E and MGP staining. The obtained findings suggested that the EMP tumour was possibly highly malignant. Moreover, immunohistochemistry confirmed the malignant potential of the tumour. We believe that immunohistochemistry is of great importance for better understanding of anaplastic traits of plasma cells. It could provide clinicians with information about the prognosis and treatment of the patient.
REFERENCES


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