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Malignant Inflammatory Fibrous Histiocytoma in a Pointer Dog

Sun-hee Do and Kyu-shik Jeong
Dept. of Vet. Pathol., College of Vet. Med., Kyungpook National Univ., Daegu, Korea
E-mail: dshpooh@nate.com

Introduction

Malignant fibrous histiocytomas (MFHs) is the most common type of soft tissue sarcoma in the old animal with a aggressiveness, a high local recurrence rate and significant metastatic rate, which associated with a poor prognosis. In most histologic and immunohistological studies, the tumor cells raised from a fibroblastic and/or myofibroblastic phenotype, presumably from undifferentiated mesenchymal cell origin. MFHs are usually firm and invasive, arising in the subcutis; metastasis depends on tumor grade (many are grade 3) [1,2]. The primary tumor cells are pleomorphic, varying in appearance from fusiform to round. Often nucleoli are prominent and irregular [5]. Extracellular amorphous eosinophilic material may be prominent and likely represents reactive collagen production by the tumor [5].

Materials and Methods

A 6-year old Pointer had a history of the same site mass 3 years earlier was presented with a red to brown nodule in the left ultimate costa. An incision biopsy was performed under general anesthesia. Tissue was fixed in 10% neutral buffered formalin solution for light microscopy, processed routienly and embedded in paraffin. Sections were cut into 4 ㎛ in thickness and stained with hematoxylin and eosin (H&E) and Azan for collagenic activity in neoplastic cells.

Results

A red to brown blood-filled neoplasm, approximately 2 cm in diameter, was detected on the last costa region. Clinical examination revealed a nodular tumor diffused to the muscular layer. An incision biopsy was performed for histopathological observation. Histologically, the lesions were extended from subcutaneous into dermal layer. Salient feature of the neoplasm is large influx of inflammatory cells carrying infiltration of lymphocytes, plasma cells, and neutrophils, which can be diagnosed as a inflammatory cell type of MFH. Undifferentiated sarcoma had neoplastic histiocytes, fibroblasts hyperplasia, and ossifying matrix, including spindle cell areas showing occasional cart-wheel (storiform) pattern. Neoplasms also included neovascularization, muscle necrosis and invlovement of surrounding tissue.

Discussion

MFH is divided into three subtype, inflammatory, multi-nucleated giant cells, and storiform-pleomorphic [4]. Commonly, inflammatory type tumors showed bizzare histiocytoid cells, concealed by an inflmmatory cell infiltrated with lymphocytes, plasma cells, eosinophils, and neutrophil. Tumors of giant type had multi-nucleated giant cell, spindle cell, and mononuclear histiocytic cell. Storifrom-pleomorphic type tumors displayed cartwheel (storiform) pattern of fibroblasts-like cells and histiocytoid cell. In some report three possible cells of origin were proposed: 1) histiocytic cells able to function as facultative fibroblasts, 2) fibroblasts, and 3) primitive mesenchymal cells able to differentiate into fibroblasts and histiocytes [1,2,4]. Generally, histopathologic observation of MFHs have been revealed spindle-shaped tumor cells embedded in the collagenous stroma with cellular pleomorphism, and high mitosis suggestive of MFH, neoplastic fibroblasts are arranged in a storiform pattern, ill-defined cell borders and amorphophilic or eosinophilic cytoplasm. So far although MFH is one of most highly aggressive tumors among soft tissue sarcoma in elder dogs, it is poorly studied from diverse diagnostic point of view.

References

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