Clinical Commentary

Malignant fibrous histiocytoma: A controversial neoplasm

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Malignant fibrous histiocytoma (MHF) is a neoplasm of controversial histogenesis. In veterinary medicine it has also been called giant cell tumour of soft parts and extraskeletal giant cell tumour. This tumour is also known in human pathology as fibroxanthosarcoma and fibrohistiocytic sarcoma. In man it is listed in most recent series as the most common type of soft tissue sarcomas, but it is sporadic in animals.

Professor Juan Rosai and collaborators described this neoplasm in man and the related controversies very thoroughly (Rosai 2004). Many human neoplasms formerly designated pleomorphic rhabdomyosarcoma or pleomorphic liposarcomas were renamed MFH in the 1970s and 1980s. Serious doubts have been raised in human pathology about the existence of MHF as a specific entity. It may well be that this designation embraces sarcomas of various types, and in particular fibrosarcomas, having some common morphological features, such as pleomorphism and a storiform pattern of growth (Rosai 2004). In retrospect, the somewhat arbitrary assumption that fibrosarcomas are almost never pleomorphic is at least partially responsible for the almost epidemic proportion that MHF reached some years ago in man (Rosai 2004). Several morphological variants of human MFH have been described: storiform-pleomorphic, myxoid (now considered part of myxofibrosarcomas), angiomatos and giant cells. Ultrastructurally, human MHF consists of a combination of cells resembling fibroblasts, myofioblasts, histiocytes and primitive mesenchymal cells (Rosai 2004). Immunohistochemically there is usually reactivity for vimentin, alpha1-antitrypsin, alpha1-antichymotrypsin, KP-1 (CD68), factor XIIIa, ferritin and the plasma proenzyme factor XIII, and sometimes for actin, desmin and lysozyme (Rosai 2004).

In veterinary medicine, MFH is uncommon to rare in domestic carnivores and has been reported in horses and very rarely in cattle (Render et al. 1983; Waters et al. 1994; Sartin et al. 1996; Williamson and Middleton 1998; Schneider et al. 1999; Goldschmidt and Hendrick 2002; Meuten 2002; Morris et al. 2002; Valentine 2006; Yamate et al. 2007; Jubb et al. 2007; Reesink et al. 2009). MFH has been reported in multiple locations in domestic animal species, including the soft tissues of the neck, thigh, stifle and forelimb of horses, and the skin, bones or viscera.
MFH is reported as 1.3% of cutaneous neoplasms in a survey of equine cutaneous neoplasia in the Pacific Northwest (Valentine 2006). Some veterinary pathologists speculate that MFH may not be a distinct entity but rather a collection of anaplastic mesenchymal and non-mesenchymal tumours. Nevertheless, the diagnosis of MFH is made when a combination of fibroblast, histiocyte-like cells and multinucleated giant cells along with collagen fibres are observed. They tend to occur in older animals on the extremities and ventrum, but also in other locations. The neoplasm tends to be a single, firm, often ulcerated mass, with a moderate growth rate, locally invasive and may tend to recur after surgery (Fig 1). In horses recurrence has been observed, and metastases are considered a very rare event. Histologically, the giant cell type is the most common in animals (Fig 2). They are comprised of fibroblast-like spindle cells forming a storiform pattern or in interwoven bundles separated by collagen fibres. This portion of the tumour resembles fibrosarcoma. Histiocyte-like cells are scattered within the tissue or form clusters and multinucleated giant cells with numerous nuclei. The giant cells resemble osteoclasts but no osteoid is detectable. Mitotic figures are sporadic to frequent and sometimes atypical. The diagnosis is morphological and immunohistochemistry is not particularly useful for MFH diagnostic recognition. The sporadic association with suture and small foreign body may indicate this as a triggering factor in some cases.

Differential diagnoses in horses include sarcoid, benign schwannoma, fibrosarcoma, malignant peripheral nerve sheath tumour and liposarcoma. All these neoplasms present typical microscopic morphological features. Sarcoid, fibrosarcoma, malignant peripheral nerve sheath tumour, MFH, liposarcoma can be locally aggressive and tend to recur. Fibrosarcoma is rare in horses. Sarcoid is a very common bovine papillomavirus associated neoplasm, which should be renamed. The treatment of MFH is radical surgical removal with ample margins, and Nd:YAG laser irradiation has been used in a recurrent equine case (Geburek et al. 2007). Equine MFHs tend to be locally invasive and post surgical recurrence is variable (50% recurrence rate reported by Render et al. 1983) but tend to be more frequent when arising within the limbs and with giant cell MFH (Render et al. 1983; Marryatt 2003).

References


