

SELF ASSESSMENT

What is your diagnosis?

A FOUR-YEAR-OLD, entire male Elkhound presented initially with a history of right hindlimb lameness. Bilateral coxofemoral pain and crepitus together with stifle pain were evident. Radiographs at this stage showed bilateral coxofemoral subluxation and marked osteophyte formation consistent with degenerative joint disease occurring secondarily to hip dysplasia. Radiographs of the stifle showed an effusion. No other changes were present. Cytology results following arthrocentesis of the stifle were consistent with degenerative joint disease. Histological examination of synovial membrane biopsies revealed uniform cellular hyperplasia of synovial origin. No evidence of malignant transformation was seen. Prednisolone was instituted at a dose of 0.5 mg/kg twice

daily and a dramatic improvement was noted over a two-week period.

The dog presented again six months later with a 7/10 right hindlimb lameness. General physical and neurological examinations were normal. Palpation of the stifle revealed a large soft tissue swelling medially with thickening laterally. Marked pain was elicited on manipulation. Haematological and serum biochemical analyses were unremarkable. Mediolateral (Fig 1) and caudocranial (Fig 2) radiographs of the stifle were taken. Left and right lateral and ventrodorsal views of the thorax with the lungs inflated were unremarkable.

● What abnormalities are present on the radiographs?

Answers overleaf

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- What are the differential diagnoses?
- What further diagnostic procedures are recommended?
- How would you manage this case?
- What abnormalities are present on the radiographs?



FIG 1. Mediolateral



FIG 2. Ventrrodorsal

What was your diagnosis?

● What abnormalities are present on the radiographs?

The mediolateral view shows marked intra- and periarticular soft tissue swelling with displacement of the patella cranially, and the lateral fabella caudally. Thinning of the cortices of the distal femur, mild periosteal new bone formation and punctate lucencies in the distal femoral and proximal tibial metaphyseal regions are evident.

On the caudocranial view, marked soft tissue swelling is noted, especially on the medial aspect, along with displacement of the patella medially and the fabella laterally.

● What are the differential diagnoses?

Differential diagnoses of an osteolytic and osteoproliferative process affecting several bones of the same joint include neoplasias, such as

- Synovial cell sarcoma
- Fibrosarcoma
- Osteosarcoma
- Myxosarcoma
- Rhabdomyosarcoma
- Liposarcoma
- Haemangiosarcoma
- Squamous cell carcinoma
- Haemangiopericytoma
- Mast cell tumour.

Other less likely possibilities include infection and immune-mediated, inflammatory/erosive disease.

● What further diagnostic procedures are recommended?

The radiographic findings are suggestive of a neoplastic lesion. However, definitive diagnosis requires histological analysis of biopsy specimens. In this case, histology revealed a syncytial mass of stellate and spindle cells with infrequent mitoses in abundant myxoid stroma, suggesting a low-grade sarcoma of soft tissue.

Radiographs of the thorax in left and right lateral recumbency and/or a dorsoventral projection are required to detect the presence of pulmonary metastases. The dorsoventral view is especially useful if metastectomy is to be performed.

Abdominal radiography/ultrasonography is useful to detect a primary neoplasm or multifocal disease.

Fine-needle aspiration of local lymph nodes is advisable.

● How would you manage this case?

Local resection without amputation was not feasible in this case, due to the extent of the lesion and presence of bone invasion. In this case, hind-limb amputation was performed. Post-operative chemotherapy could be considered in certain cases but no benefit to low-grade soft tissue sarcomas has been shown.

Discussion

Tumours affecting joints occur infrequently in small animals, and few cases have been reported in the literature (Harasen 2002, Silva-Krott and others 1993, Evans and others 2004). The most commonly reported tumour is the synovial sarcoma representing 27 per cent of all joint tumours in one study (Whitelock and others 1997). Other tumours affecting joints are infrequently reported. Middle-aged, large-breed dogs appear predisposed but synovial sarcoma can occur at any age (McGlennon and others 1998, Vail and others 1994). The stifle joint is most commonly affected, followed by the elbow (Whitelock and others 1997, Fox and others 2002).

Synovial sarcoma is thought to arise from undifferentiated mesenchymal cells in the deep connective tissue associated with synovial joints that differentiate into synovioblasts (Morris and Dobson 2001). Synovial sarcoma is thought to cause joint destruction by invasion of subchondral bone at the articular margins (Pool 1990). The significance of synovial hyperplasia on the initial biopsy specimens taken from this animal is uncertain.

Synovial sarcoma should be suspected in middle-aged, large-breed dogs with radiographic evidence of a destructive lesion of bone on both sides of a joint associated with periarticular soft tissue swelling. The clinical and radiographic findings do not distinguish synovial sarcoma from other neoplasms affecting joints, and definitive diagnosis requires histological analysis of incisional biopsies. Fine-needle aspirates are of limited value with soft tissue sarcomas (Morris and Dobson 2001).

In this case, multiple incisional biopsies were taken from the soft tissue mass along with samples from the distal femur using a Jamshidi needle (Veterinary Instrumentation). No bone neoplasia was present in the samples submitted. However, marked remodelling was evident as a result of soft tissue invasion. Definitive histological classification, as in this case, is difficult as synovial sarcomas, particularly those that are poorly differentiated, may be indistinguishable from other tumours (Fox and others 2002). Definitive diagnosis of synovial sarcoma was made by histological analysis following limb amputation.

The metastatic rate of synovial sarcoma is reported to be between 41 per cent and 54 per cent (Vail and others 1994, McGlennon and others 1988).

Amputation is the treatment of choice in cases of synovial sarcoma. The value of adjunctive chemotherapy has not been proven, although Morris and Dobson (2001) suggest it may be useful as an adjunct to surgical management in high-grade malignant tumours. Tilmant and others (1986) report the use of doxorubicin in conjunction with cyclophosphamide and this could be considered in future cases.

A study by Vail and others (1994) established prognostic indicators for synovial sarcoma. It suggested that clinical stage, histological grade and positive cytokeratin staining influence survival time and disease-free interval. However, the findings of this study could not be corroborated in a later series of cases (Fox and others 2002). This study suggested aggressiveness of treatment was a more powerful determining factor in survival. The majority of dogs with synovial sarcoma can be expected to have survival times in excess of three years following amputation (Vail and others 1994). The dog described here has shown no recurrence of clinical signs or evidence of metastases 18 months after amputation.

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