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What is your diagnosis?

Acute non-weight bearing pelvic limb lameness in a dog

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What is your diagnosis?

Case history

A 2.5-year-old male hunting Labrador retriever with no prior medical problems was referred with a history of yelping whilst jumping into a car or when going upstairs. This progressed over three days to a non-weight bearing lameness of the left pelvic limb. The dog was also reported as being reluctant to lie on its left side. The referring veterinarian detected signs of marked pain upon left hip manipulation. Lateral and dorso-ventral pelvic radiographs were unremarkable, apart from the presence of a transitional sacralised and asymmetric eighth lumbar vertebra. Haematology showed a neutrophilia ($16.15 \times 10^9/L$ – ref. 3.00-11.50) and serum biochemistry showed raised creatine kinase (651 IU/L – ref. 0-90). The dog was treated with meloxicam and buprenorphine prior to being referred.

On presentation, the dog had a non-weight bearing lameness of the left pelvic limb. Vital parameters and general clinical examination (including rectal palpation) were within normal limits. Signs of severe pain were elicited by applying gentle pressure to the lumbosacral musculature between the sixth and seventh lumbar spinous processes and the left ilial wing, and in the paramedial inguinal area. The findings of a neurological examination were normal. Serum biochemistry was repeated and creatine kinase (879 IU/L) was still elevated. Haematology and urinalysis results were within normal limits and urine culture was negative.

Magnetic resonance imaging (1.5 Tesla InteraNT, Philips Healthcare) of the pelvis and lumbosacral spine (Fig. 1) and computed tomography (Siemens Somatom Emotion 16) of the same regions (Fig. 2) were performed. The computed tomography exam was preferred for surgical planning therefore added to the diagnostic imaging tests.

Diagnostic imaging

The magnetic resonance imaging of the pelvis and lumbosacral spine revealed (Fig. 1) ill-defined T2/STIR hyperintense lesions and moderate to severe contrast (gadolinium) enhancement in the region of the left sacroiliac joint and surrounding soft tissues, especially at the ventral aspect of the L8 transverse process that formed part of the sacroiliac joint. Computed tomography regions (Fig. 2) revealed: (i) an irregular left sacroiliac joint with erosion of the joint margins; and (ii) ill defined areas of lysis of the cortical and medullary bone of the ventrolateral aspect of the left sacral wing, the medial aspect of the left ilial wing and the ventrolateral aspect of the left sacralised transverse process of L8. No other abnormalities were detected in the thoraco-lumbar spine and abdomen.

Based on the findings of the diagnostic imaging, the differential diagnosis of the polyostotic osteolytic lesions centred on the left sacroiliac joint included: (i) bacterial arthritis or osteomyelitis (possibly due to foreign body migration, infection from adjacent tissues or haematogenous spread from a distant infection); (ii) a fungal infection; and (iii) neoplasia (synovial cell sarcoma, histiocytic sarcoma, undifferentiated sarcoma).

Biopsy and culture

Cytological analysis of ultrasound guided fine needle aspirates of the lesion was inconclusive and culture was negative. Therefore, surgical exploration and biopsies of the iliac bone and sacroiliac joint was performed *via* a lateral and ventral approach to the ilium (Fig. 3). A crescentic osteotomy was performed with an 18mm diameter TPLO saw blade and the sacroiliac joint exposed (Fig. 3). A transilial approach has been used to access the lumbosacral joint in cadaveric dogs by drilling an 18mm diameter hole through the ilium (1) and we used a similar approach to access the sacroiliac joint in our case. The focus of osteolysis was identified and a swab and biopsies obtained before irrigating the region. Culture from the swab was negative but the cultured bone fragments yielded a *Staphylococcus pseudointermedius* sensitive to most commonly utilised antibiotics. Histopathology confirmed the presence of multifocal neutrophilic chondritis and periostitis.

The dog was treated with cephalexin (22 mg/kg BID) for 6 weeks and kept on strict rest with lead only exercise. The dog had one episode of pain in the middle of this course but thereafter gradually improved and was slowly returned to exercise. On follow-up at 18 months after disease onset, the dog is normal and actively used on the shooting field.

Diagnosis

Left sacroiliac septic arthritis caused by *Staphylococcus pseudointermedius* and adjacent osteomyelitis of the sacrum and ilium, transitional lumbosacral vertebra (sacralised L7) with the 'L8' transverse process articulating with the ilium.

Discussion

Sacroiliac osteomyelitis has never been described in dogs, although focal osteomyelitis of the ilium of a 4-month-old bitch has been reported following a cutaneous abscess and septicaemia (2). It is also rare in humans, with 1 to 2 cases reported every year (3). The most common route of infection is *via* haematogenous spread from a distant infection (3,4), though in 44% of cases the source of infection is unknown (3). It is uncertain in the presented case where the infection originated. The malformed lumbosacral region may be significant since transitional vertebrae have been reported to predispose to *cauda equina* syndrome and joint and disc diseases but any relationship with the development of osteomyelitis is unknown (5,6). A positive intervertebral disc culture has been reported in 12/52 dogs with lumbosacral diseases (of which 3 were caused by *Staphylococcus intermedius*) (7), suggesting subclinical discospondylitis that could contaminate neighbouring structures. As our case was a hunting dog, a tracking foreign body is plausible and exploration of the retroperitoneal space *via* a laparotomy was another approach that was considered, although there was no indication of an infectious track on imaging. The negative cultures both from the bacterial swab taken at surgery and from the fine needle aspirate of the lesion illustrate the utility of the bone biopsy in dogs with suspected joint/bone infections, as found in humans (2).

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Figure legends in part I

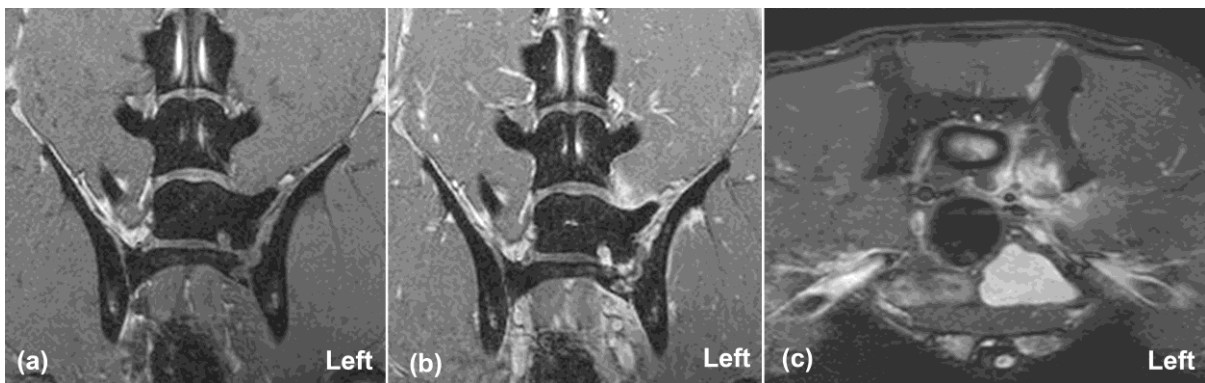


Fig. 1: Magnetic resonance imaging of the pelvis and lumbosacral spine of a 2.5-year-old male hunting Labrador retriever with non-weight bearing left pelvic limb lameness. (a) Dorsal image of the pelvis and spine on a 3D volume T1 weighted image before contrast agent (gadolinium) administration; (b) same image as (a) but obtained following intravenous injection of gadolinium; (c) transverse STIR image of the lumbosacral junction.

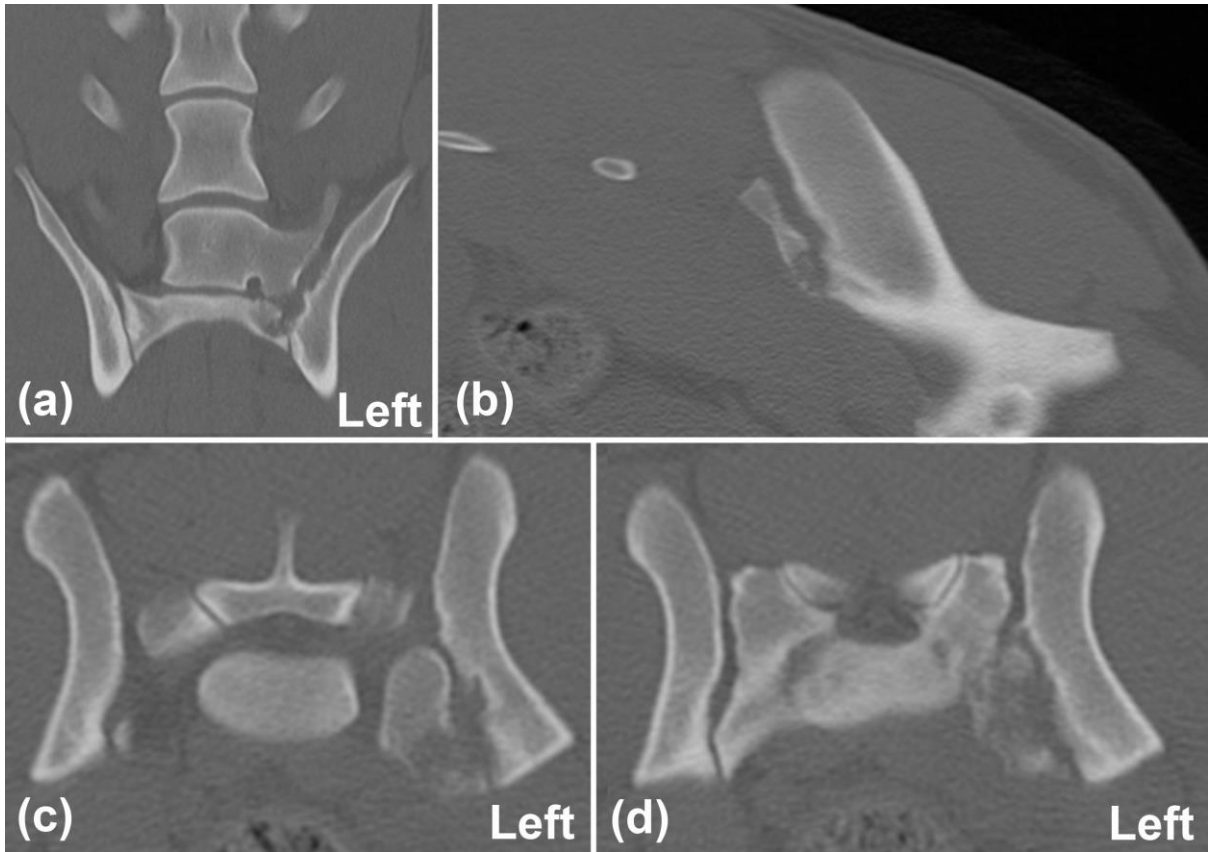


Fig. 2: Computed tomography (bone window) of the pelvis and lumbosacral spine of a 2.5-year-old male hunting Labrador retriever with non-weight bearing left pelvic limb lameness. (a) Dorsally reconstructed image of the pelvis and spine; (b) parasagittal image of the pelvis and spine; (c, d) transverse images of the lumbosacral junction.

Figure legends in part II

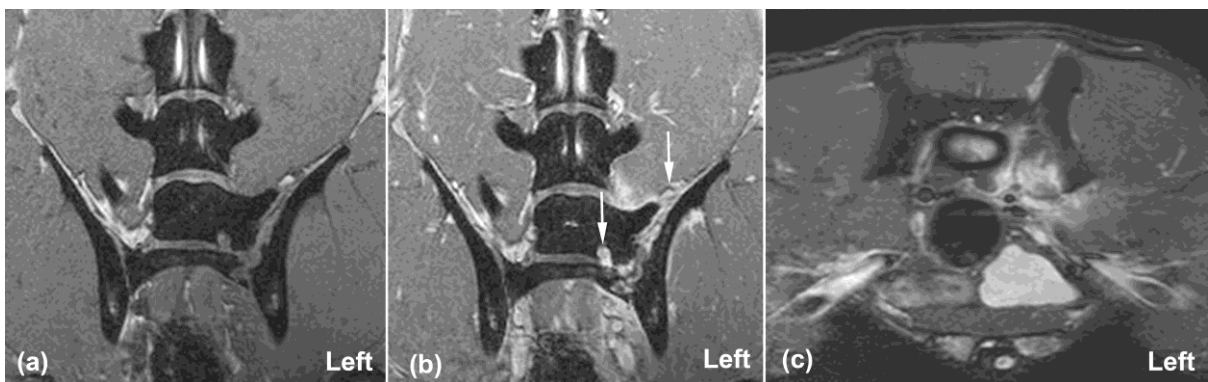


Fig. 1: Magnetic resonance imaging of the pelvis and lumbosacral spine of a 2.5-year-old male entire hunting Labrador retriever with non-weight bearing left pelvic limb lameness. (a) Dorsal image of the pelvis and spine on a 3D volume T1 weighted image before contrast agent (gadolinium)

administration; note the irregularity and widening of the sacroiliac joint on the left side compared to the right. (b) Same image as (a) but obtained following intravenous injection of gadolinium; note the marked contrast enhancement of the sacroiliac joint (white arrows). (c) Transverse STIR image of the lumbosacral junction showing the pronounced hyperintense inflammation around the left sacroiliac joint.

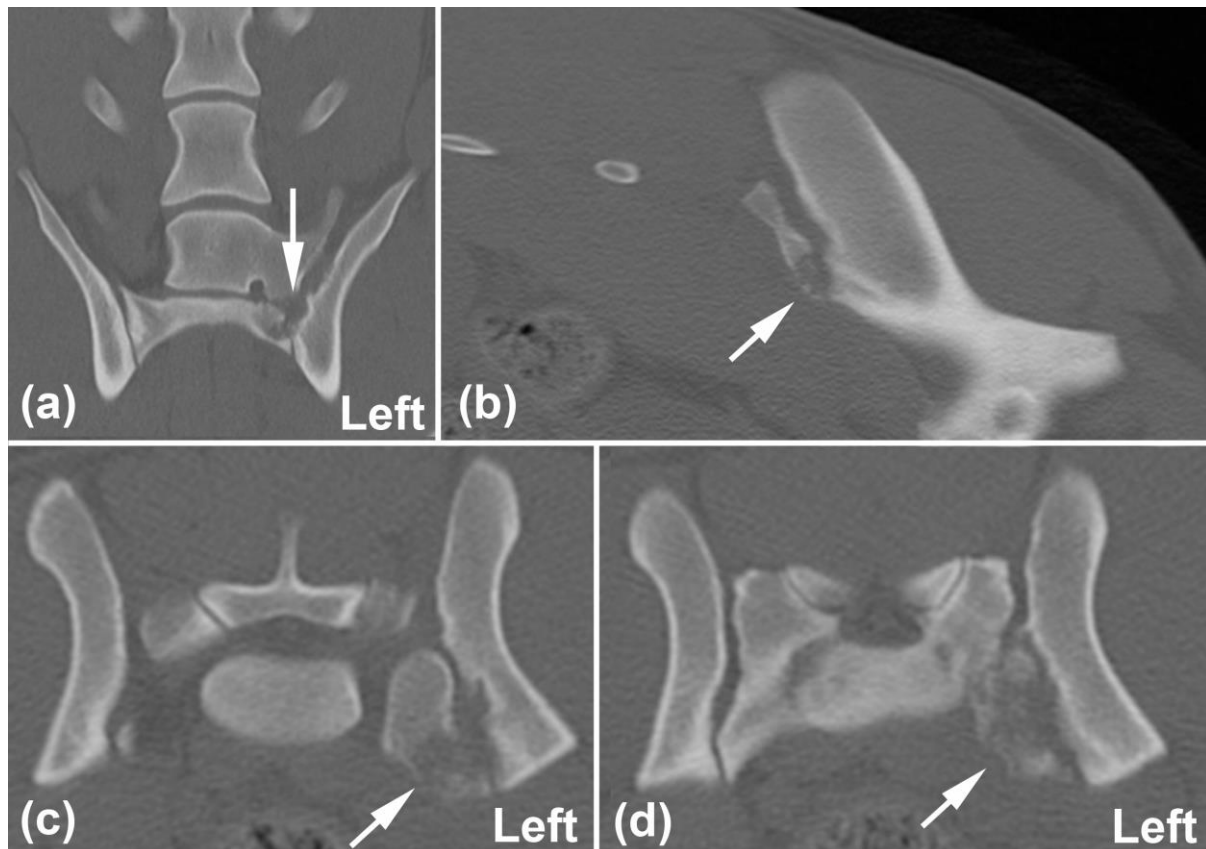


Fig. 2: Computed tomography (bone window) of the pelvis and lumbosacral spine of a 2.5-year-old male hunting Labrador retriever with non-weight bearing left pelvic limb lameness. (a) Dorsally reconstructed image of the pelvis and spine. This dog has a transitional sacralised and asymmetric eighth lumbar vertebra with a left sided transverse process forming part of the sacroiliac articulation; note the osteolysis of the left sacroiliac joint margins (white arrow). (b) Parasagittal image of the pelvis and spine demonstrating the osteolysis of the ventrolateral aspect of the left transverse process of L8 (white arrow) and also used for surgical planning. (c, d) Transverse images of the lumbosacral junction showing extensive osteolysis of the ventrolateral aspect of the sacralised left transverse process of L8 (c) and of the left sacral wing (d) with free floating bone fragments (white arrows).

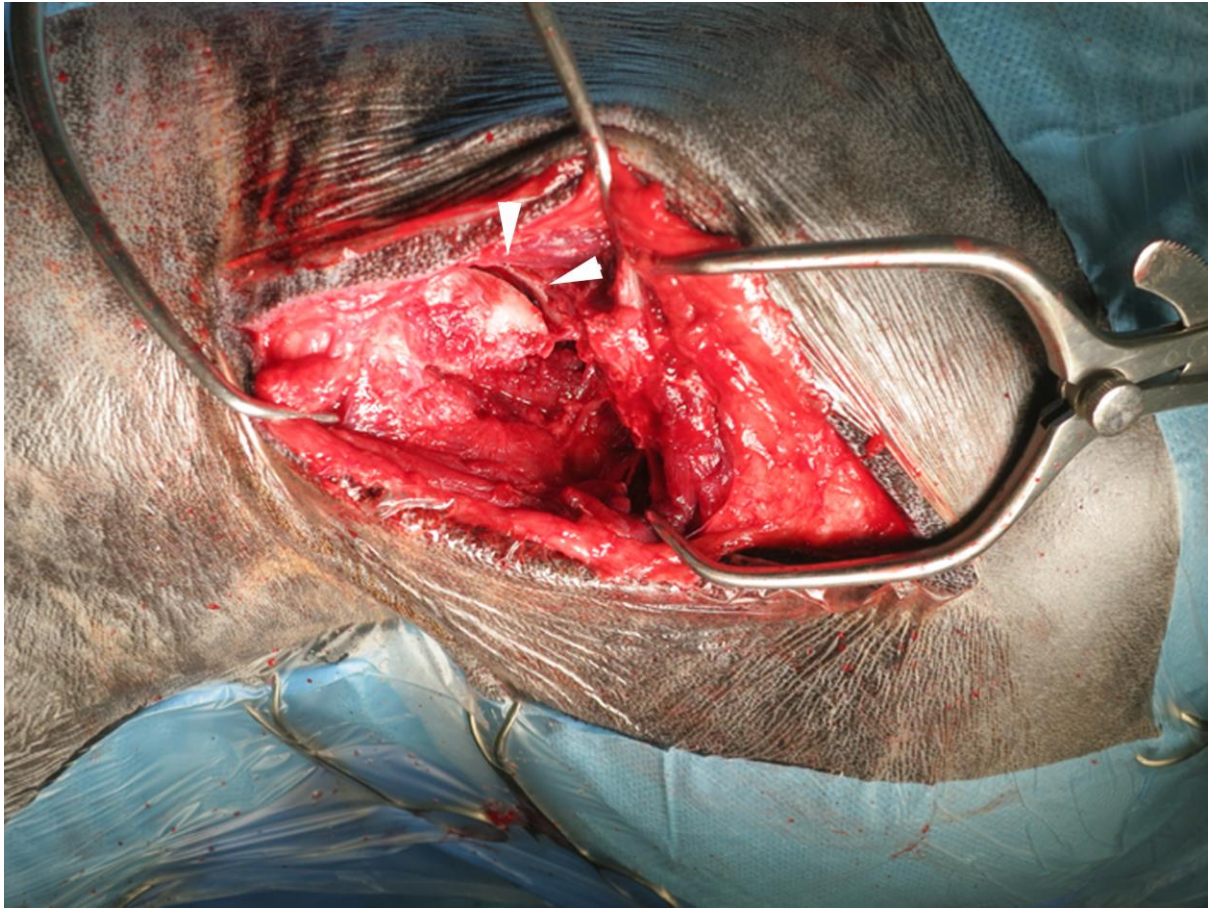


Fig. 3: Peri-operative photograph of the surgical site showing the crescentic osteotomy that was performed with a 18mm diameter TPLO saw blade to expose the sacroiliac joint and obtain bone biopsies (white arrowheads).