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Case Report

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Computed Tomographic Findings in a Foal with Acute Hindlimb Lameness

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Abstract A one-month-old Thoroughbred colt presented with left hindlimb lameness grade 5/5, according to the American Association of Equine Practitioners' lameness scale. The colt started showing signs of lameness two weeks earlier without being involved in an accident. A local veterinarian examined the foal; radiography revealed no significant findings under the hip joint. No improvement was noted after 15 days of non-steroidal anti-inflammatory drugs (NSAIDs) medication. On presentation at our hospital, ultrasonography was performed, which revealed no significant findings in the iliac wings. The foal underwent a computed tomography (CT) scan under general anesthesia. CT revealed bone cysts in the following that could have caused the lameness: the left transverse process of the 5th, 6th lumbar, and the 1st sacrum vertebrae; osteophytes in the auricular surface of the ilium, suggestive of sacroiliac arthritis. The foal recovered smoothly from anesthesia with assistance. The foal was treated with NSAIDs and rested for more than six months. The owner reported that the foal showed no lameness one year later. CT revealed bony changes in the lumbosacral region that were not detected by radiography and ultrasonography, suggesting that CT could be useful for detecting abnormalities in the pelvic region of horses.

Key words computed tomography, sacroiliac joint, bone cyst, horse.

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Introduction

The sacroiliac (SI) joint is a flattened synovial joint between the transverse process of the first sacrum (S1) and the iliac auricular surface. The flat surface allows only a gliding movement of the joint. This joint has atypical articulation between the hyaline cartilage surface of the S1 and the fibrocartilage surface of the ilium. The surrounding ligament sling comprising the dorsal sacroiliac ligaments, the ventral sacroiliac ligaments, and the interosseous sacroiliac ligaments, supports the stability of the SI joint (4,8). The SI joint supports weight bearing and transfers propulsive forces from the hindlimbs to the thoracolumbar vertebrae (4,8). In addition, the SI joint could be involved in regulating locomotion and posture (1,6).

Sacroiliac joint dysfunction (SJD) is believed to cause poor performance in horses (9). On the other hand, little is understood about SJD because of the anatomical structure and location of the SI joint. In addition, the symptoms of SJD are usually vague and non-specific (4,8). The diagnosis of SJD usually starts with the elimination of other potential disorders. Subsequently, equine practitioners examine patients with the SI joint provocation test, ultrasonography, nuclear scintigraphy, and local anesthesia to identify lesions of the SI joint (2,4,8). Nevertheless, no single test can confirm the diagnosis of SJD (2,3). In humans, computed tomography (CT) and magnetic resonance imaging (MRI) are used to assess the SI joint. CT is the preferred modality to detect bony changes in the SI joint (1). In horses, however, CT scans of the SI joint have not been reported to the best of the author's knowledge.

In the present case, a one-month-old Thoroughbred colt presented with acute hindlimb lameness. CT revealed abnormalities in the lumbosacral region. This report describes the CT findings of the SI joint and adjacent structures.

Case Report

A one-month-old Thoroughbred male foal with acute left hindlimb lameness presented to the Jeju National University Equine Hospital for CT scanning. The lameness started 15 days before the referral. A local veterinarian immediately examined the foal after the owner noticed the lameness. No significant lesions in the pelvic limbs were found distal to the hip joint in radiography. Despite treatment with non-steroidal anti-inflammatory drugs (NSAIDs), the lameness persisted. On the day of the visit, we observed grade 5/5 lameness based on the American Association of Equine practitioners' lameness scale (AAEP Horse lameness scale), asymmetry of the hip, and instability of the left hip joint in the foal. Ultrasonography revealed no significant findings in the iliac wing. The physical examination and blood analysis were normal.

The foal underwent a CT scan (Aquilion Lightning, Canon; Otawara, Japan, 32 multislice CT) in left lateral recumbency under general anesthesia. Detomidine hydrochloride 0.002 mg/kg

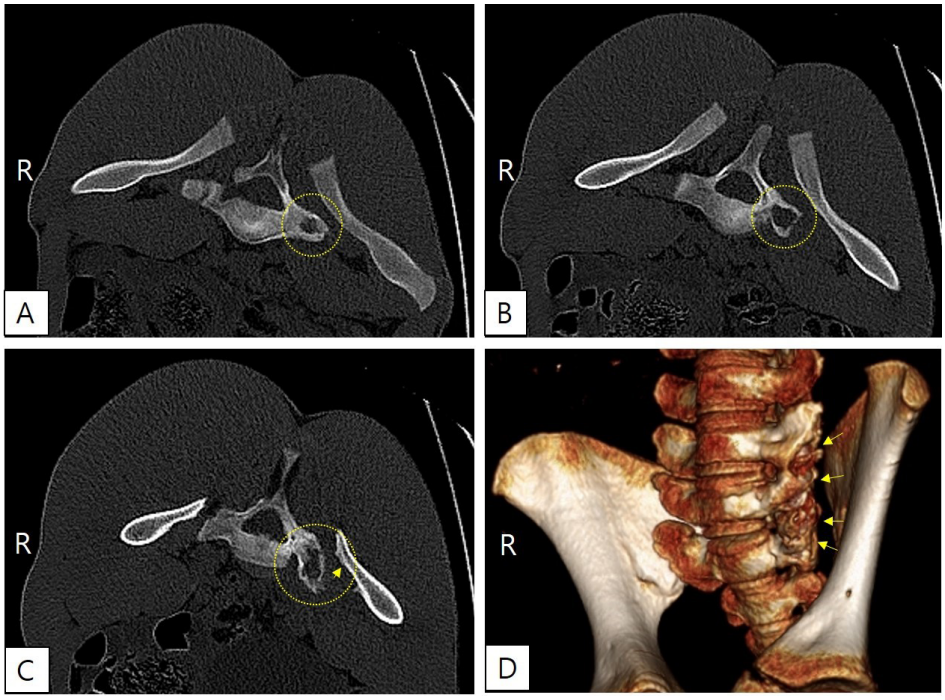

Fig. 1. Computed tomographic images of the lumbosacral region. (A) A bone cyst in the left transverse process in the 5th lumbar vertebra (L5) (dashed circle). (B) Two bone cysts in the left transverse process in the 6th lumbar vertebra (L6) (dashed circle). (C) A bone cyst in the left transverse process in the 1st sacrum (S1) (dashed circle) and osteophytes in the auricular surface of the ilium (arrow). (D) Three-dimensional reconstructive images show the irregular margin of the transverse process in L5, L6, and S1 (arrows).

(Detomidin®, Provet Veterinary Products Ltd.; Istanbul, Turkey), diazepam 0.03 mg/kg (Diazepam inj., Samjin pharm. Co., Ltd.; Seoul, Korea), and ketamine 2.2 mg/kg (Ketamine 50 inj., Yuhan; Seoul, Korea) were injected intravenously as premedication and induction. Anesthesia was maintained with intermittent ketamine injection for 30 minutes. The foal recovered smoothly with hand assistance.

The scanning parameter for the CT scan was 120 kVp, 150 mA, 0.75 sec rotation time, and 1 mm slice thickness. Three-dimensional (3D) images were reconstructed with soft tissue algorithm, 2 mm slice thickness, and 2 mm slice interval. The evaluation of the CT images was processed with a window width of 1078 HU and a window level of 429 HU.

CT revealed abnormalities in the lumbar spine, sacrum, and ilium. Bone cysts were identified in the left transverse process of the 5th and 6th lumbar vertebrae (L5: Fig. 1A; L6: Fig. 1B) and the S1 (Fig. 1C). A bone cyst <1 cm, two bone cysts <1.5 cm, and a bone cyst <2.5 cm were found in L5 (Fig. 1A), L6 (Fig. 1B), and S1 (Fig. 1C), respectively. In addition, irregular margins caused by the bone cysts of the transverse process of L5, L6, and S1 were observed (Fig. 1). Osteophytes were noted in the auricular surface of the ilium.

The foal received NSAIDs for two weeks and was rested for six months. The owner reported that the foal showed no lameness one year later.

Discussion

The CT scan revealed abnormalities in the pelvic region of a one-month-old colt with acute hindlimb lameness, which were difficult to detect by radiography and ultrasonography. Based on the bone cysts detected on CT, it was speculated that the bone cysts in the spine induced instability of the SI joint, resulting in SI arthritis and acute lameness. Earlier reports suggested that acute SJD could occur because of trauma or a pelvic fracture (4,5,8). On the other hand, this case was different because there was no history of trauma or fracture. Thus, we presumed the SI dysfunction in the foal was attributed to a congenital problem.

Bone cysts in the spine have rarely been reported in horses. CT or MRI have detected subchondral and true bone cysts in the horse vertebrae (7). On the other hand, bone cysts with irregular bone margins have not been reported to date to the best of the author's knowledge. In this case, bone cysts had similar features to aneurysmal bone cysts that have rarely been reported in horses. In previous reports, aneurysmal bone cysts were identified in the mandible and the distal limbs of young horses (10,12). In the current case, a definitive diagnosis could not be made because of the absence of a histopathologic examination. Nevertheless, these CT findings might be beneficial for diagnosing hindlimb lameness in young horses. Bone cysts with irregular bone margins in the vertebrae could be considered a cause for lameness in foals.

Evaluating the SI joint in horses can be complex and laborious. Radiography and ultrasonography are unsuitable for visualizing this region thoroughly (3,8). Equine practitioners use nuclear scintigraphy and local anesthesia to diagnose SJD (2). On the other hand, these methods cannot differentiate SJD from disorders in the adjacent structures such as ligaments or muscles. In humans, MRIs and CTs are used to evaluate the SI joint. In the current case, CT detected lesions in the lumbosacral vertebrae and the SI joint which were not detected by radiography and ultrasonography, highlighting the value of CT in assessing the pelvic area in horses.

The prognosis of SJD has been reported to be guarded or poor in previous reports focused primarily on chronic SJD patients (11). Patients with acute SJD are usually treated with strict rest, systemic NSAIDs, and physiotherapy (1,4,8). None of these treatments has been proven to be effective (8). In this case, the foal did not show lameness a year later with a six month rest and systemic NSAIDs. It was presumed that musculoskeletal development and strict rest helped stabilize the SI joint and provide pain relief. However, follow-up is necessary considering the CT findings.

This report describes the CT findings of a colt with acute left hindlimb lameness. CT identified bony changes in L5, L6, S1, and ilium, suggesting that SI arthritis caused acute lameness. The lameness reportedly improved one year later. In this case, CT revealed lesions in the lumbosacral region and the ilium which were difficult to detect by radiography and ultrasonography. Hence, CT could be useful for assessing lesions in the pelvic region of horses.

Conflicts of Interest

The authors have no conflicting interests.

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