

## Bilateral Osteoarthritis of Coxofemoral Joint in a Thoroughbred Horse

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**Abstract :** A 3-year-old black Thoroughbred colt weighing 500 kg was admitted to the Equine Hospital of Korea Racing Authority (KRA) due to the chronic gait abnormality of the hindlimbs. The history revealed that the patient had run and fallen onto the fence of the farm about at the age of 1 year old and the lameness had been worsening insidiously since the accident. The degree of lameness was 2/5 in accordance with the AAEP lameness grading system in both hindlimbs at hand walking and trot. The lameness was exacerbated at lunging clockwise and counterclockwise on both hindlimbs. The definitive diagnosis of the bilateral osteoarthritis of coxofemoral joint was established using radiography under general inhalation anesthesia. The prognosis was considered to be poor with low expectancy for racing and the colt was expelled from the racecourse eventually. The clinicians are required to consider the possibility of osteoarthritis of coxofemoral joint presented with chronic hindlimb lameness although it is rare. This is the first report on the bilateral osteoarthritis coxofemoral joint in Republic of Korea.

**Key words :** osteoarthritis, coxofemoral joint, lameness, radiography, horse.

### Introduction

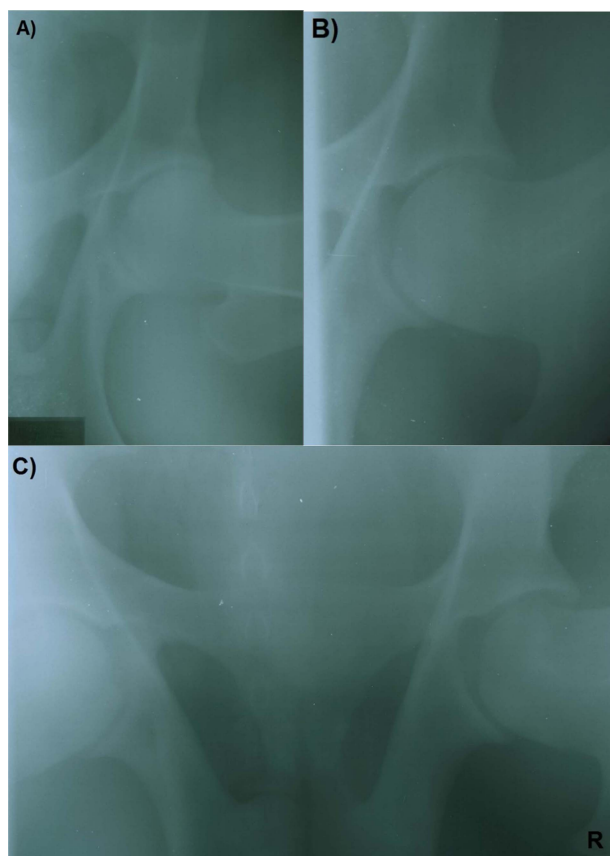
Osteoarthritis (OA) is a common cause of lameness and poor performance of the horse (5). OA of the coxofemoral joint is rare although any of osseous disease processes can lead to osteoarthritis of the coxofemoral joint of horses (11). Idiopathic infection, a proposed hereditary basis, abnormal development of the coxofemoral joint and trauma have been reported to cause osteoarthritis of the coxofemoral joint in horses in previously reported cases (2-4,10,12). Osteoarthritis in horses was classified as 3 clinical entities (7). Type 1 OA is primary, commonly seen in the carpus, fetlock, distal tarsal and distal interphalangeal joints. Type 2 OA is associated with and usually secondary to other identifiable injuries or damage to the joint such as intra-articular fractures, OCD or septic arthritis. Type 3 OA is incidental or nonprogressive articular cartilage damage (7). This case report describes a bilateral OA of coxofemoral joint in a Thoroughbred colt diagnosed using radiography under general inhalation anesthesia. This is the first report on bilateral OA of coxofemoral joint in a horse in Republic of Korea to our knowledge.

### Case

A 3-year-old black Thoroughbred colt weighing 500 kg was admitted to the Equine Hospital of Korea Racing Authority (KRA) due to the chronic gait abnormality of the hindlimbs. The history revealed that the patient had run and fallen onto the fence of the farm about at the age of 1 year old and the lameness had been worsening insidiously since the acci-

dent. The patient was bright, alert and responsive and in good body condition with a temper upon physical examination. The ophthalmologic exam revealed no abnormalities. At standing, there was no evident swelling or heat on the joints, tendons and ligaments. No clear pain response was observed on palpation or manipulation of the hindlimbs. The degree of the lameness was 2/5 on both hindlimbs in accordance with the AAEP lameness grading system at hand walking and trot. The lameness was exacerbated at lunging clockwise and counterclockwise on both hindlimbs. The marked low arc of flight and reduced cranial phase of stride were observed during the entire lameness examination. The spavin test on both sides did not seem to cause pain or affect the lameness. There was no pain or heat on all hooves at hoof test. Extensive radiologic examination was conducted on all hooves and joints up to shoulder and stifle joints. No significant abnormalities were observed except for mild OA of distal tarsal joints on both hindlimbs, which was hard to believe to be related to the clinical condition at presentation. The patient was readmitted for radiologic examination of coxofemoral joints under general anesthesia in 7 days. The vital signs, CBC and serum chemistry profiles were in normal ranges with no signs of improvement in lameness. The rectum was evacuated to facilitate visualization of the lesions and avoid artifacts caused by fecal balls. The patient was sedated with 40 µg/kg of detomidine (Provet Detomidine; Provet) and 11 mg/kg of guaifenesin (Giafen; Bayer) and induced into general anesthesia with 2 ml/kg of ketamine (Ketamine; Yuhan). Anesthesia was maintained with isoflurane (Ifrane; Hana) and oxygen inhalation. Once the patient was recumbent dorsally, the flexed ventrodorsal and a pair of flexed ventromedial-dorsolateral oblique views of x-ray were taken. The definitive diagnosis of the bilateral OA of coxofemoral joints was established as the radiographs revealed evidence of bone

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**Fig 1.** Osseous lesions including mild osteophyte production along with an altered contour of the both femoral heads observed in radiographs taken for a colt presented with a chronic lameness of both hindlimbs under general inhalation anesthesia. A) Ventromedial-dorsolateral oblique radiographic view of the left coxofemoral joint. B) Ventromedial-dorsolateral oblique radiographic view of the right coxofemoral joint. C) Ventrodorsal radiographic view of the both coxofemoral joints.

remodeling including mild osteophyte formed with an altered contour of the femoral head of both hindlimbs (Fig 1).

## Discussion

Osteoarthritis is a disease process of synovial joints characterized by cartilage degeneration, subchondral bone sclerosis, osteophyte formation, varying degrees of synovial inflammation and periarticular tissue fibrosis (5,8). Although the exact etiology has not been elucidated nor an effective treatment discovered, trauma has been suggested to be a common etiological factor of OA (5). In this case, the cause of OA was speculated to be the trauma caused by running and falling onto the fence of the farm when younger with the owner's statements on the beginning of the clinical signs put together. Overloading a joint causes subchondral sclerosis as the joint tries to remodel for greater strength leading to a decreased ability of the subchondral bone to absorb shock. In turn, this places more tensile strain on the cartilage and causes failure of the collagen crosslinking, then this leads to fibrillation and breakdown of the cartilage (9). One of the most common and unfortunate accidents involving young untrained horses at the

farm is a horse to run and fall onto the fence and then try to stand up or to jump over the fence, which leaves one with some serious damage on the musculoskeletal system for the rest of one's life. Infection is another etiologic factor to be considered for OA of coxofemoral joint as previously reported with sudden onset much more severe lameness (14). However, it was not likely with this case since there were no signs of infection in both clinical signs and hematology.

Although there is poor correlation between radiographic changes and clinical signs in OA, radiography is the most frequently used method of diagnosis of OA (13). The most common radiographic abnormalities observed in OA are osteophytes, subchondral sclerosis, narrowing of the joint space and soft tissue swelling. In this case, mild osteophyte formation along with altered contour of the femoral head was observed in both sides of the coxofemoral joints for a definite diagnosis of OA to be established. Radiography for pelvis of horse in standing position have been proposed and used since radiography under general anesthesia is costly and time-consuming as well as there is concern that movements during induction and recovery period, which may result in an unexpected injury of the patient (1,6). Radiography in standing position was attempted for this case at first visit but the patient was apprehensive about the procedure and kept moving to make it impossible to get the images of quality. Despite all the drawbacks related to the general anesthesia, the procedure was successful and went uneventfully to provide with adequate quality radiographs in this case.

Treatment of non-septic OA is palliative with the use of nonsteroidal anti-inflammatory drugs or intra-articular medications such as sodium hyaluronate, polysulfated glycosaminoglycans or corticosteroids. Although there are no long-term reports on OA of coxofemoral joint, the prognosis is believed to be poor due to procedural difficulty of intra-articular therapy for coxofemoral joint (11). Given that the colt was meant to be a racehorse, the owner decided to expel him from the racecourse eventually due to the poor prognosis for racing with low expectancy.

## Conclusion

Bilateral OA of coxofemoral joint caused by trauma was diagnosed using radiography under general anesthesia. The clinicians are required to consider the possibility of OA of coxofemoral joint presented with chronic hindlimb lameness although it is rare. Further studies with a large number of similar cases of chronic hindlimb lameness must be conducted in order to investigate the prevalence of OA of coxofemoral joint.

## References

1. Amitrano FN, Gutierrez-Nibeyro SD and Joslyn SK. Radiographic diagnosis of craniodorsal coxofemoral luxation in standing equids. *Equine Vet Educ* 2014; 26: 255-258.
2. Clegg PD. Idiopathic infective arthritis of the coxofemoral joint in a mature horse. *Vet Rec* 1995; 137: 460-464.
3. Haakenstad LH. Undersøkelse over den patologiske hofteledsluk-sasjon hos hest med hensyn til lidelsens vesen og etiologiske forhold. *Nord Vet Med* 1953; 5: 884-896.

4. Jogi P and Norbery I. Malformation of the hip-joint in a Standardbred horse. *Vet Rec* 1962; 74: 421-422.
5. Kidd JA, Fuller C and Barr ARS. Osteoarthritis in the horse. *Equine Vet Educ* 2001; 13: 160-168.
6. May SA, Patterson LJ, Peacock PJ and Edwards GB. Radiographic technique for the pelvis in the standing horse. *Equine Vet J* 1991; 23: 312-314.
7. McIlwraith CW. General pathobiology of the joint and response to injury. In: *Joint Disease in the Horse*, 1<sup>st</sup> ed. Philadelphia: Saunders Co. 1996: 40-70.
8. McIlwraith CW. Current concepts in equine degenerative joint disease. *J Am Vet Med Assoc* 1982; 180: 239-250.
9. Radin EL, Burr DB, Caterson B, Fyhrie D, Brown TD and Boyd R. Mechanical determinants of osteoarthritis. *Semin Arthritis Rheum* 1991; 21: 12-21.
10. Speirs VC and Wrigley R. A case of bilateral hip dysplasia in a foal. *Equine Vet J* 1979; 11: 202-204.
11. Stashak TS. Lameness Part XIV: The coxofemoral joint. In: *Adams' Lameness in Horses*, 5<sup>th</sup> ed. Philadelphia: Lippincott Williams & Wilkins. 2002: 1037-1043.
12. Trent AM and Krook L. Bilateral degenerative coxofemoral joint disease in a foal. *J Am Vet Med Assoc* 1985; 186: 284-287.
13. Widmer WR and Blevins WE. Radiographic evaluation of degenerative joint disease in horses-Interpretive principles. *Compend Cont Educ Pract Vet* 1994; 16: 907-919.
14. Woodford NS, Puzio J and Parker RD. Idiopathic infectious arthritis of the coxofemoral joint in a mature horse. *Equine Vet Educ* 2017; 29: 544-548.