

6-1-2017

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Recommended Citation

Tavanaeimanesh, Hamid; Masoudifard, Majid; and Moaddab, Seyyed Hosein (2017) "Temporohyoid osteoarthropathy in a mare with unilateral facial paralysis and vestibular signs," *The Thai Journal of Veterinary Medicine*: Vol. 47: Iss. 2, Article 17.

Available at: <https://digital.car.chula.ac.th/tjvm/vol47/iss2/17>

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Temporohyoid osteoarthropathy in a mare with unilateral facial paralysis and vestibular signs

Hamid Tavanaeimanesh^{1*} Majid Masoudifard² Seyyed Hosein Moaddab³

Abstract

The aim of this case report was to present clinical signs and radiographic features of one of the most important peripheral vestibular diseases in horse, and also present the treatment for this disease. Temporohyoid osteoarthropathy (THO) is caused by proliferation of the proximal stylohyoid bone and petrous temporal bone which finally results in ankylosis of the temporohyoid joint. Any sudden movement may result in damage to the joint and also structures in its vicinity. Some peripheral nerves especially cranial nerve VII and VIII may be affected and THO manifestation appears. The mare presented in this report was referred with unilateral facial nerve paralysis, ptosis and vestibular signs including ataxia, head tilt and circling. X-ray was used to confirm the diagnosis. By X-ray, the left stylohyoid bone showed osteoarthropathy, which confirmed the diagnosis. Treatment consisted of fluid therapy, dexamethasone (0.2 mg/kg every 24 hours IV for 10 days), and antibiotic administration (24 mg/kg potentiated sulfonamide every 24 hours IM for 30 days). The vestibular signs disappeared after 3 months. However, one year after the treatment, the facial nerve paralysis still remained.

Keywords: temporohyoid osteoarthropathy, temporohyoid joint, facial nerve, vestibular sign, horse

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Introduction

Temporohyoid osteoarthropathy (THO) is one of the most common neurologic diseases of horse which manifests mainly vestibular signs and facial nerve paralysis (Hassel et al., 1995; Walker et al., 2002; Divers et al., 2006). THO is characterized by proliferation of the proximal stylohyoid bone and petrous temporal bone which may lead to ankylosis of the temporohyoid joint (THJ), causing the petrous temporal bone and stylohyoid to fracture easily during normal movement of the tongue or head and also during medical procedure such as insertion of nasogastric tube, or dental examination and floating (Walker, 2002).

THO causes facial paralysis which is almost unilateral and is also accompanied by vestibular signs. In rare cases, if hypoglossal and vagus nerve are involved, dysphagia occurs.

Case Story

An eight-year-old thoroughbred mare was referred with signs of unilateral facial paralysis including lower lip and ear drooping. No vestibular signs were noted. The mare was blindfolded to induce vestibular signs but no signs were noted again. She did not show any pain around the base of the ear and showed no resistance when the temporal region was palpated. Blood sample was taken for complete blood count (CBC) and the result was normal. The first diagnosis was trauma or THO. Therefore, she was treated for three days with dexamethasone (0.2 mg/kg every 24 hours IV) and for 5 days with penicillin (25000 IU every 24 hours IM). No changes were seen but her status was stable, and she was able to go back to work.

After 3 months, while she was grazing, suddenly she fell down. The mare was very depressed and demonstrated vestibular signs including ataxia, head tilt to the left side, and circling. Nystagmus was also seen. She was reluctant to let her ear be touched and showed pain on the region. Left side facial paralysis was noted including drooping of ear and lower lip, ptosis, and deviation of nostril to the right side (intact side) (Fig. 1).



Figure 1 Head tilt and left facial paralysis demonstrated by ear drooping, lower lip drooping and muzzle deviation to the normal side (right side)

Diagnostic Methods

Diagnosis was based on the history and clinical signs, which were confirmed by X-ray. A radiograph was taken, and the left hyoid bone was found to have serrated caudal margin which showed arthropathy (Fig. 2). Also, signs of osteoarthropathy and fracture were seen in the left temporohyoid joint in the petrous temporal bone region (Fig. 3).

Treatment

Immediately after the diagnosis, THO treatment was started with fluid therapy, hypertonic saline was administered (5 ml/kg bolus) to reduce the inflammation around THJ.

Hypertonic saline helps to reduce edema because of its high osmolarity and increases cardiac output, therefore it could be used in shock. Its peak effect appears at 20 min after starting the infusion (Tavanaeimanesh et al., 2015).

Dexamethasone was administered (0.2 mg/kg every 24 hours IV) for 10 days. Potentiated sulfonamide (24 mg/kg every 24 hours IM) was also used for 30 consecutive days.

The vestibular signs disappeared gradually, and 3 months after the onset of disease all of the vestibular signs disappeared. However, the facial nerve paralysis still remained after one year. Because the mare lost her sport performance, her owner asked to cover her and she is pregnant now.



Figure 2 Caudal border of left stylohyoid bone with serrated surface, showing osteoarthropathy (arrow)



Figure 3 Signs of osteoarthropathy and fracture in left temporohyoid joint in petrous temporal bone region (arrow)

Discussion

THO is a progressive disease of the stylohyoid and petrous temporal bones that leads to ankylosis of THJ; the stylohyoid and petrous temporal bones become susceptible to fracture by normal movement of the tongue and larynx (Oliver and Hardy, 2015). The etiology of THO is not completely understood, but two main theories exist. The first one is chronic infective proliferative osteomyelitis secondary to otitis media-interna. In this theory,

haematogenous spread and local spread of infection originating from the inner and middle ear in horses have been suggested (Hassel et al., 1995; Walker et al., 2002; Divers et al., 2006). The second hypothesis is nonseptic degenerative arthrosis of the temporohyoid articulation which leads to ankylosing osteoarthropathy (Pease et al., 2004). This theory is more logical because most THO cases occur in middle-aged horses, in approximately 10-year-old horses (Walker et al., 2002; Grenager et al., 2010). Otitis more

commonly occurs following pneumonia in young horses; although it is not in compliance with the epidemiologic features of this disease, undoubtedly otitis and haematogenous spread of infection could be another less common etiologic route of THO.

In one study, 31.3% of horses with THO had crib-biting in their history and horses with neurologic disease associated with THO were 8 times more likely to be crib-bitter (Grenager et al., 2010).

Diagnosis is based on clinical manifestation and guttural pouch endoscopy, radiography and CT scan. Radiograph resulted in the diagnosis 23 of 26 cases in one study (Blythe et al., 1990).

Lesion is more likely to be seen in standing lateral position, as this oblique projection keeps the tympanic bulla away from each other (Divers et al., 2006).

The main clinical signs are the facial nerve paralysis resulting in ear drooping, ptosis, dropped lower lip, and muzzle deviation away from affected site. Vestibular signs such as head tilt, circling and lose of balance may also be demonstrated. Keratoconjunctivitis sicca is another complication of THO. Usually signs are unilateral. Dysphagia due to damage to the glossopharyngeal and vagus nerve may also be observed. Horses are sometimes depressed for several days as the result of pain and sepsis in the fractured region.

In one retrospective study of 33 cases, cranial nerve VII was involved in 87.9% and cranial nerve VIII in 69.7% of cases with neurologic sign of THO (Walker et al., 2002). Sixteen of 26 (Blythe et al., 1990) and 7 of 33 cases (Walker et al., 2002) had bilateral involvement of THJ with one side more severely affected (Blythe et al., 1990).

Treatments include management of inflammation and pain as the result of bone fracture, control of secondary infection by antibiotic and regeneration of the damaged nerves.

Prognosis is good and approximately 50% of horses could recover following medical treatment with antibiotics and anti-inflammatory drugs (Divers, 2006). It could take a year or longer for maximal improvement (Walker et al., 2002).

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บทคัดย่อ

โรค Temporohyoid osteoarthropathy ในแม่ม้าที่มีอาการอัมพาตใบหน้าและการทรงตัว

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วัตถุประสงค์ของรายงานสัตว์ป่วยนี้ เป็นการนำเสนออาการทางคลินิกและลักษณะทางรังสีวิทยาของโรคที่เกี่ยวข้องกับการทรงตัวในม้า และแนวทางการรักษาโรค โรค Temporohyoid osteoarthropathy (THO) มีสาเหตุจากการงอกของกระดูก stylohyoid และกระดูก petrous ซึ่งจะส่งผลให้เกิด ankylosis ของ temporohyoid joint ดังนั้นการเคลื่อนที่อย่างรุนแรงอาจทำให้เกิดความเสียหายต่อข้อต่อและโครงสร้างภายในโดยรอบ รวมทั้งเส้นประสาทรอบข้าง โดยเฉพาะอย่างยิ่งเส้นประสาทเส้นที่ VII และ VIII ซึ่งอาจมีผลต่อการแสดงอาการ THO ในรายงานฉบับนี้ ม้าป่วยแสดงอาการอัมพาตใบหน้าและการทรงตัว ประกอบด้วย อาการเดินเซ ศีรษะเอียง และบางครั้งเดินเป็นวงกลม ผลการเอ็กซเรย์เพื่อยืนยันการวินิจฉัย พบกระดูก stylohyoid ด้านซ้าย มี osteoarthropathy แนวทางการรักษาประกอบด้วย การให้สารน้ำยา dexamethasone (0.2 มก. / กก. ทุก 24 ชั่วโมง IV เป็นเวลา 10 วัน) และการให้ยาปฏิชีวนะ (sulfonamide 24 มก. / กก. ทุก 24 ชั่วโมงนาน 30 วัน) หลังจากการรักษา 3 เดือนพบว่า สัตว์มีอาการทรงตัวดีขึ้น อย่างไรก็ตามพบว่า อาการอัมพาตเส้นประสาทหน้ายังคงอยู่นานเป็นปีหลังจากการรักษา

คำสำคัญ: temporohyoid osteoarthropathy temporohyoid joint เส้นประสาทใบหน้า อาการทรงตัว ม้า

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