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Short communication

Prevalence and etiology of lameness in racing camels (*Camelus dromedarius)* in Abu Dhabi Emirate

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Abstract

Lameness in racing camels is considered to be a major welfare issue and an economic problem for camel owners in the Abu Dhabi Emirate. The prevalence of lameness in camels, although assumed to be significant, is not known. This study was conducted to determine the prevalence and etiology of lameness in racing camels. A systematic lameness survey was conducted by visiting 340 professional private camel farms (a total of 3600 racing camels) in the Abu Dhabi Emirate. Lameness was diagnosed in 428 racing camels. The overall prevalence of lameness was 9.39% and 2.50% on acute basis and chronic basis, respectively. Lameness was associated with signs of pain, reduced appetite, restlessness, reduced activity in standing up and moving, abnormal movements include limpness and stiffness and reduced flexion of affected leg. Lameness was observed in all ages of racing camels but a higher prevalence was observed in 3-4 years age group (12.19%) and 9-10 years age group (3.54%) for acute and chronic lameness, respectively. Lameness was observed more frequently in forelimbs (67.76%) than hind limbs (32.24%). Traumatic injuries, fractures, soreness and punctures foot were the common causes of lameness in young racing camels while abscesses and muscles spasm were the common causes in adult racing camels.

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Introduction

The camel, known as the "ship of the desert", is an old habitant of the desert where water and food are scarce and ambient temperature is high. According to the Food and Agriculture (FAO) 2009 report, there are 24.25 million one-humped camels (*Camelus dromedaries*) in the world) with 80% of them in Africa and the highest population in Somalia (7 million) and Sudan (4.25 million). In Asia about 70% of dromedaries are found in India and Pakistan (Bakht et al.,

2003). There are approximately 494.242 camels in the Abu Dhabi Emirate (SCAD, 2010). Of these more than 14,000 are racing camels. Camel racing is closely associated with the unique heritage of the UAE and the traditional lifestyle of Bedouins. It is mainly staged to mark important social occasions such as wedding ceremonies, community festivals or the visits of important people to Bedouin villages. The camel is a very hardy animal and is well adapted anatomically and physiologically to harsh climatic desert conditions. Nevertheless, camels suffer from various diseases and conditions which affect camel health. Diseases and conditions causing lameness are among the most common pathologies in camels (Al-Juboori et al., 2010). Lameness is an abnormal gait or locomotion characterized by limping or not bearing full weight on a leg usually associated with pain in the musculoskeletal system (Radostitis et al., 2008), which may be acute or chronic depending on the duration and the cause of the case. Lameness occupies the fourth position among economically important problems in camel cows after mastitis, reproductive problems and metabolic diseases (Dewes 1976, Eddy and Scott 1980, Collick et al., 1989, Clarkson et al., 1996 and Cynthia 2005). Lameness in racing camels is also considered to be a major welfare and economic problem encountered by camel owners at the present time. Lameness in camels causes substantial economic losses in terms of decreased milk production, decreased reproductive performance, growth retardation, culling of the camel from the competition or farm, decreased physiological vitality of the camel and additional cost in the care and treatment of the affected animal (Manefield and Tinson, 1997, Al-Ani, 2004, and Al-Juboori et al., 2010). The camel has a different pattern of lameness as compared to bovine and equines. This may be due to its peculiar anatomy, biomechanics, geoclimatic adaptation and use (Gahlot, 2000). Lameness in camels has widely different etiology which includes direct trauma, nutrition, infection and fractures (Gahlot and Chouhan 1992, Ramadan, 1994, Gahlot, 2000, Al-Ani, 2004, Gahlot, 2007 and Al-Juboori 2011a and b). The prevalence, causes, types and treatment of lameness in cattle, sheep, goats and horses has been extensively studied. However, the prevalence and causes of lameness in racing camels has not been documented. This is possibly due to the limited racing activities for camels worldwide. Accordingly, the aim of the present study was to investigate the prevalence, range of pathologies associated with lameness and causes of lameness in a large population of racing camels in the Abu Dhabi Emirate. This work is

expected to contribute to a better understanding of the risks and injury mechanisms involved in camel racing and husbandry and lead to improvements in animal welfare.

Materials and Methods

A systematic survey was conducted to assess the prevalence of lameness in racing camels in 340 professional private camel farms (a total of 3600 racing camels) around Abu Dhabi Emirate. The farms varied both in size (12-18 camels) and geographical location (North, West and East of Abu Dhabi Emirate). A total of 428 lame camels were examined at Central Veterinary Hospitals (Al Wathba, Samah and Madinat Zayed Veterinary clinics), Abu Dhabi Emirate during years 2009 to 2010, at no cost to the farmer, by one of a team professional veterinarians. The data of inspection, the camel and farm identification and the cause and type of lameness were recorded. Bovine hoof tester and walk on sandy, pebbled or hard tracks (Gahlot, 2000 and 2007) were used to diagnose the non bone fractured camel. The fractured camels were diagnosed by radiography. The causes of lameness judged to be most significant were as abscesses, traumatic injuries, fractures, soreness, punctures foot, muscles spasm, tumors, arthritis, sole ulcer, lymphangitis, sprain of fetlock and osteomyelitis. The information pertaining to the racing lame camel examined during this study was collected. This included identity of the camel, housing and management, concurrent disease, body weight, age, duration of lameness, previous lameness history, feed intake and medication of the camel.

Statistical analysis

Data were collected about, relationship between animal's age, type of lameness and distribution of different causes of lameness according to the limbs affected and various age groups. Obtained data was then transferred to the database management spreadsheet programme of Microsoft Excel and analyzed using SPSS software. The age mean significant differences between "chronic & acute, and fore and hind" and chronic proportion significant difference between fore and hind limbs have been tested using independent t-test while the age significant different between causes of limbs have been tested using ANOVA. Differences were considered significant at a level of $P<0.05$.

Result and Discussion

In this study, a total of 3600 racing camels were examined clinically for the diagnosis of lameness, the overall incidence of lameness on acute basis was found to be 9.39%, while on chronic basis 2.50% (Table 1). Singh and Gahlot (1997) reported the incidence of

affections of musculoskeletal system is to be 10.14 % and 55.62 % in camels brought in clinics and in field cases, respectively. The incidence of lameness in racing camels as revealed during the present study is considered low, especially when compared to the reports of (Faye and Lescourret, 1989; Clarkson et al., 1996; Warnick et al., 2001; Hernandez et al., 2001; Dembele et al., 2006; Espejo et al., 2006; Lira et al., 2011) in cows, which revealed the prevalence rate ranging from 20%-46%. Camel has an altogether different pattern of lameness as compared to bovine and equines. It could be due to its peculiar anatomy, biomechanics, geoclimatic adaptation and uses (Gahlot, 2000). Lame camels in the field were observed to be in pain, showed inappetence, more restless, reduced activity in standing up and moving, abnormal movements include limpness, sagging or stiffness and lack of flexion of affected leg. All ages of racing camels were susceptible to acute and chronic lameness but higher prevalence occurred in camels of age 3-4 years (12.19%) and 9-10 years (3.54%) to acute and chronic lameness, respectively. The highest prevalence of lameness in young camels (3-4 years) may have been due to inexperience with the racing tracks as well as over training/exercise. Of the 428 camels having lameness (table 2), forelimbs were affected with lameness (62.45%) more frequently than hind limbs (37.55%). The reason for higher incidence in forelimbs can be their greater chances of getting injuries than hind limbs (more weight taken by the forelimbs than hindlimbs) (Al Juboori 2011b). Traumatic injuries (34.81%), abscess (20.33%) fractures (9.58%), punctures foot (7.71%), sore shin (7.71%), sole ulcer (3.74%) and arthritis (5.84%) were the main causes of lameness in camels. Singh and Gahlot (1997) found the overall prevalence of fracture and dislocation is 2.89% and 10.60% foot disorders. However, Gahlot (2000) found arthritis, fractures, sprain, strain, subluxation and punctured foot are the common causes of lameness in camels in India and the same author reported that the highest fracture incidence in head region followed by fore limbs and hind limbs. In another study (Ramadan, 1992) found the hindquarter regions had highest fracture incidence followed by head region and fore limbs. Observations in regards to the incidence of different types of lameness, as occurring in various age groups, were recorded (Table 3). Traumatic injuries (58.51%), fractures (15.96), sore shins (10.64 %) and punctures foot (9.57%) were the common causes of lameness in young racing camels while abscesses (45.07%) and spasm of muscles (12.82) were the common causes in adult racing camels. It is pertinent

that thorough and effective diagnosis and management of lameness be performed adequately so that the conditions can be put under control to allow increased productivity of the camels (Al Juboori, 2011a).

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