Spastic syndrome in two cows in Northeastern Brazil

Síndrome espástica em duas vacas no Nordeste Brasileiro

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Summary: The spastic syndrome was diagnosed in a 3 1/2 year-old crossbred and a 7-year-old Holstein cow from Pernambuco, Northeastern Brazil. The disease has not been reported previously in Brazil. Signs of the disease were exacerbated while the cows were housed indoors and after excessive handling. The owners were advised not to use these cows in reproductive programs since the disease is inherited as an autosomal-dominant gene.

Keywords: spastic syndrome, muscles spasms, hind limbs, hereditary disease, cow.

Spastic syndrome (krampfigkeit, barn cramps, crampy syndrome, crampiness, periodic spasticity) is a progressive disorder of adult cattle affecting both sexes and characterized by episodic contractions of the lumbar muscles and extensor muscles of rear limbs (Smith, 2002) and becomes progressively more severe with age (Guard, 2008). The condition is considered to be inherited as an autosomal-dominant gene and has been reported in many dairy breeds including Holstein, Ayrshire, Jersey, Brown Swiss, and Guernsey (Scarratt, 2004); although it has been recognized in beef cattle (Tenszen, 1998). Prevalence has been reported to be between 2.6% and 5% in dairy cattle, and up to 2% in beef cattle (Becker et al., 1961); however, one study reported prevalences between 10% and 30% in older, proven bulls (Tenszen, 1998).

Episodes of muscle contractions are observed in adult cattle between 3 and 7 years of age and usually occur after the animal stands up (Scarratt, 2004). The initial clinical signs are mild and consist of spasms of the muscles of the rear limbs resulting in extended legs (Gibbons and Saunders, 2001). Initially affected cattle show crampiness as they attempt to rise and subsequently extend the affected hind limbs behind their bodies in an effort to relax the muscles contractions. In confined cattle, this results in the animals standing off the curb or placing the hind feet in the manure droop (Guard, 2008). Spasms are never seen while the animals are lying down. The episodes initially last for 15 to 30 seconds but increase in duration and severity as the disease progresses. Affected cattle are unable to move during an episode but are normal between episodes (Scarratt, 2004).

Spastic syndrome is poorly reported worldwide. Thus, the objective of the present work is to describe the clinical findings of two cows with spastic syndrome in Northeastern Brazil.

Case reports

Cow 1 was a 3 1/2 year-old, crossbred (Holstein x Gir) cow. The owner observed more frequent spasms attacks near and after calving. Cow 2 was a 7-year-old Holstein cow, recently purchased, and showed clinical signs after arrived at the farm. Both cows were raised semi-intensively and were the only cases at the two farms, located in Pernambuco, Northeastern Brazil.
On clinical examination following the recommendations of Dirksen et al. (1993), the cows were found to be in good body condition for dairy breeds. Both cows showed calm behavior and the only abnormal findings were limited to the musculoskeletal system with spastic extension of the hind legs affecting both legs and kyphosis on a minor or major degree (Figure 1). The attacks lasted for a few seconds and then the cows returned to normal posture. During episodes the animals could not move and it was impossible to flex their legs. The proprioceptive responses appear normal in both cows. The animals worsen during indoors confinement in the clinic, having more frequent attacks especially when moved more often or during backwards movements and manipulation during milking. Otherwise, in outdoors pasture, the signs of the spastic syndrome were diminished to a temporary stretching posture and a stiff gait in the hind legs.

Discussion

The diagnosis was made based on the typical clinical signs (Greenough et al., 1981; Tenszen, 1998) and the ruling out of other diseases (Greenough et al., 1981). The differential diagnoses include hoof overgrowth, necrosis of the interdigital space and heels, abscesses of the sole and dermatitis of the bulbs (Greenough et al., 1981); all these problems were discarded after detailed clinical exam. The clinical examination of the ligaments also discarded patellar luxation. In spastic paresis (Elso heel) the attacks are not episodic (Smith, 2002) and affect most commonly calves between 1 week and 1 year of age (Scarratt, 2004). Spinal cord compression or abscess formation in the vertebral canal may be accompanied respectively by muscular spasms, or incoordination, but these conditions usually progresses rapidly and the signs are continuously present (Mayhew, 1989). In the hypomagnesaemic tetany (grass tetany) hypersensitivity of varying degree is present; the condition is progressive, responds to treatment and is not yet reported in Brazil. Spastic syndrome affects bovines aged 3 to 7 years, whereas idiopathic epilepsy generally affects bovines under the age of two years and is accompanied by unconsciousness (Greenought et al., 1981).

As with previous reports of spastic syndrome (Tenszen, 1998; Guard, 2008), signs of the disease were exacerbated while the cows were housed indoors. Both cows were in the age interval more frequent for occurrence of the disease (3-7 years). The musculoskeletal and postural abnormalities during attacks and exacerbated spasms during exciting manipulation (excessive handling, backwards movements and during milking) and stressful events (transportation and labour) are reported in the literature (Greenough et al. 1981; Tenszen, 1998; Scarratt, 2004; Dirksen, 2005; Guard, 2008). The more frequent attacks observed in Cow 1 near parturition are due to the rising in fetal cortisol initiating the stages of labour (Hafez, 2000) and the attacks after parturition could be consequence of stressful handling of the cow. Cow 2 showed attacks during movements after a stressful event such as transportation and adaptation to a new environment. Muscle was not biopsied, because it was expected that a complete postmortem would be performed. However, none of the owners authorized euthanasia, so no histopathological examination was possible. Probably, no associated lesions would have been found as the clinical disease is consistent with the absence of significant pathologic alterations (Wells et al., 1987).

The owners were advised to avoid the use of these cows on future breeding programs and to keep affected animals as comfortable and stress-free as possible, to avoid exacerbation of clinical signs. Eventually affected animals are culled early because of weight loss or chronic foot problems (Smith, 2002).

This is believed to be the first report of spastic syndrome in Brazil and has the objective to remind practitioners that the syndrome also occurs in the

Figure 1 - 3 _ year-old crossbred (A) and a 7 year-old Holstein cow (B) during spasms attacks showing arched back (kyphosis) in spastic syndrome.
country. Affected animals should be culled since the syndrome is inherited as an autosomal-dominant gene.

Bibliography


