Clinical Reports

Hyperthermic Syndrome in Dairy Cattle Associated with Consumption of Ergots of Claviceps purpurea in Southern Brazil

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ABSTRACT. A hyperthermic syndrome (HS) associated with consumption of ration contaminated with Claviceps purpurea is described in 4 dairy cattle herds from different counties in the state of Rio Grande do Sul, southern Brazil. Outbreaks of this mycotoxicosis occurred during the summer of 1999-2000 and autumn of 2002 when 25% to 70% of cattle from those herds were affected. The disease occurred after the introduction of a new batch of feed contaminated with sclerotia of C purpurea. First clinical signs were observed up to 3 mo after the ration was introduced and consisted of pyrexia, intense salivation and drooling, open-mouth, difficult breathing, in some cases with the tongue protruded, decrease in milk yield, decrease in food intake and weight loss. Affected cattle compulsively sought shade or water ponds. Signs were more pronounced during daytime. The severity of the clinical picture varied according to changes in environmental temperature during the day. There was complete recovery approximately 60 d after feeding with the contaminated ration was discontinued. Abortions occurred during the outbreak and soon after the remission of the clinical signs associated with HS. In one of the herds, reproductive performance and fertility were seriously impaired even after clinical signs of HS completely disappeared. Diagnosis was based on epidemiology, clinical signs and pathology. The pathogenetic mechanisms involved in the occurrence of HS are briefly discussed.

There are 4 different clinical syndromes associated with consumption of sclerotia of the fungus Claviceps purpurea in cattle: hyperthermic syndrome (HS) (1-5); classical cutaneous ergotism (6,7); convulsive syndrome (8); and reproductive syndrome (9). HS has also been associated with feeding of fescue infected by the endophyte fungus Neotyphodium (Acremonium) coenophialum that can similarly produce ergot alkaloids (10,11).

HS affects dairy and beef cattle (1,4) kept in pasture (3-5) or feedlots (1,2,5). Outbreaks of this mycotoxicosis usually occur in seasons with high temperatures as during the summer, autumn and spring (2,4,5,8). Exceptionally, this syndrome is observed affecting dairy cattle during the winter when weather is dry, cool and sunny (5). HS can affect from 60 to 100% of the herd (1,2,4). Clinical signs are observed 2 to 3 w (1-4) after the introduction of cattle into pastures infected with sclerotia of C purpurea (3-5) or after the animals start consuming contaminated rations (1,2,4,5) or hay (4).

The clinical picture consists of anorexia (1,2), diarrhea (5,8), clear nasal discharge (2,5), increased respiratory rate (2,5), excessive salivation (1,2,4) and open-mouthed breathing with the tongue protruded (1,4). Body temperatures rise up to 40-43°C (1-5) (hyperthermia) and water intake is increased (4). Some sick cattle become lethargic with high-stepping, uncoordinated gait (5). Rapid, labored breathing and salivation are also observed and become worse after exercise (1,3-5). Affected animals compulsively seek shade (1,3,4) or any available collection of water (1,2,4,5).

The intensity of the clinical signs in HS varies according to environmental temperature (1). The clinical picture is more severe during the warmest hours of the day (35°C) (1,4). Remission of clinical signs occurs during night but recur the following day when environmental temperatures rise again (1). Most cows are apparently healthy on cold days, but typical signs of HS usually recur with hot weather (4).

Cattle affected by HS also have partial anorexia (3), failure to gain weight (2) and loss of body weight (4). In chronic cases, cows develop shaggy hair coats (4). Poor growth and matted, long hair coat are more conspicuous in young animals (4). In dairy cattle, milk production can fall sharply by 75% (1,4). Daily milk production on affected farms can drop by 10-60% (4).

After the use of contaminated feed is discontinued, affected animals usually recover from illness but this process is gradual and long-lasting. Remission of clinical signs usually begins approximately 2 w after feeding of infected foodstuff is interrupted. Complete recovery occurs 2 to 3 mo after withdrawal of contaminated feed (2,4). High mortality rate is not a consistent feature in outbreaks of HS, but deaths can occur spontaneously in some particular circumstances (2,5). Death rates can reach 38% (5). It is suggested that lethal episodes occur when hyperthermic affected animals are exposed to excessive high environmental temperatures or prolonged bright sunlight without access to shade or when they are exercised (5). Sick animals kept in places with temperatures over 30°C commonly die when exercised strenuously (12).

Outbreaks of the different forms of C purpurea ergot-alkaloid poisoning in farm animals, including the HS, have been described worldwide (1-9,13). This mycotoxicosis has been considered one of the most interesting new discoveries in food-animal medicine of recent times (12). In Brazil, anecdotal cases