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Clostridial infections and malign edema in farm animals

Ahmet Gülçubuk

Istanbul University-Cerrahpasa Veterinary Faculty, Department of Pathology, Avclar, Istanbul, Turkey

Abstract

Clostridial infections usually occur in herbivores, especially in ruminants, as well as in carnivores and humans. There are many subtypes of the bacteria. Although they usually cause enteritis in ruminants, they give rise to fatal infections in the brain, kidneys and muscle tissue. Among Clostridium species, *Clostridium (Cl.) perfringens* are classified according to four major antigenic lethal exotoxins. The major toxin of *Cl. perfringens type A* is the alpha toxin. *Cl. perfringens A* causes gas gangrene with other clostridial agents. In type A infections, acute intravascular hemolysis is rarely seen in calves and lambs. Animals are often found dead or in coma. Jaundice and hemoglobinuria are seen in clinical findings. *Cl. perfringens type B* is the causative agent of lamb dysentery. Mesenteric torsion and hemorrhagic enteritis are the most typical findings found in necropsy. *Cl. perfringens type C* leads to enterotoxaemia known as “struck” in adult sheep. In necropsy, a large amount of clear, pale, yellow, coagulated fluid and subperitoneal bleeding are found in the abdominal cavity. *Cl. perfringens* with type D toxin (epsilon) causes enterotoxaemia in sheep and goats. Epsilon toxin is secreted from the intestines, but it acts on the brain and kidneys. It causes pulpy kidney and focal symmetric encephalomalacia in the brain. *Cl. difficile* A toxin causes acute hemorrhagic and necrotic enteritis in horses and humans. Enterotoxemia is usually seen in lambs that are in good body condition and grazing on pasture in spring. The disease occurs as a result of reduced intestinal peristalsis and the release of excessively fed animals with grains or concentrated forage into the pasture. Reduced intestinal peristalsis leads to hypo-mobility, which prevents the transportation of the bacteria to the colon and results in the multiplication of the bacteria in the intestine. Excessive grain or concentrated forage intake leads to high accumulation of the starch in the intestine. High levels of starch provide a favorable environment for the multiplication of saccharolytic bacteria and toxin production. Clostridial infection in muscles take the most important second place, following the clostridial infections in gastrointestinal system. Here, the most important agent is *Clostridium chauvoei*, which is the agent of the disease “blackleg”. *Cl. septicum*, *Cl. perfringens*, *Cl. novyi*, *Cl. sordelli* and *Cl. chauvoei* cause emphysematous gangrene and malign edema alone or with clostridial bacteria. Malign edema includes some cases of the clostridial myositis, in which emphysematous gangrene does not occur. In animals, gangrenous myositis is more common than non-gangrenous myositis. Malign edema is actually typical cellulitis rather than myositis and has a high mortality rate (death in 48 h), but even in toxigenic infection, muscle damage may not be significant. The reasons of the occurrence of infection are traumas, intra-muscular injections (vaccines), injuries to female genitalia during parturition, castration, shearing and the sectioning of tail. In rams, the wounds occur on the top of the head during fighting (big head- swelled head). Among these infections, malign edema causes difficulties being recognized by the veterinarians working in the field because of the special findings of the disease. Therefore, it is aimed to present and compare the general features of the cases with clostridial infections and malign edema.

Keywords: clostridia, farm animals, edema