Myocardial infarctions due to *Erysipelothrix rhusiopathiae* infection in an adult sheep

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Introduction

*Erysipelothrix rhusiopathiae* is a gram-positive bacterium that causes infection in animals and humans. Its economic importance has been reported particularly in swine, but domestic poultry, cattle, and sheep may also be involved (Brooke and Riley, 1999; Wang et al., 2010). Natural infections have also been described in ducks, horses, dogs, mice, and wildlife species (Cross and Eamens, 1987). Human infection, commonly seen as erysipeloid, usually occurs following contact with infected animals.

Case history

An 18-month-old, female, cross-breed sheep was referred for necropsy to the Department of Veterinary Sciences of Messina University at the end of 2013. The animal had been grazed together with 100 other sheep in a transhumant system. The reported clinical signs were drooling, vomiting, cessation of rumination and lactation, wheezing, and runny nose, followed by generalized muscle weakness and lethargy. The animal had gradually lost weight until spontaneous death. A complete necropsy was performed. Samples of selected organs (muscle, perirenal fat, lung, joints, heart, liver and kidneys) were partially fixed in 10% neutral buffered formalin for histological investigations according to standard procedures and partially stored at -80°C for microbiological and biomolecular analysis. Standard bacteriological assays were carried out on affected organs to detect common bacteria. Biomolecular laboratory tests for the presence of *E. rhusiopathiae* DNA sequence were performed. Total DNA was extracted from the mitral and aortic valves by means of a QIAmpli DNA mini kit (QIAGEN, Hilden, Germany) and used in a PCR test targeted to the 23S ribosomal region of *Erysipelothrix* spp. using universal primers to amplify a species-specific DNA sequence as previously described (Takeshi et al., 1999). Application of the sequencing protocol on the PCR products permits species identification.

Results

At necropsy, abundant foamy exudates in the trachea and bronchi were present and pleural hemorrhages were observed. Gross pathology showed left heart hypertrophy, with multiple coalescing grayish to white foci surrounded by hyperemia occupying the entire thickness of the left ventricular wall (Fig. 1A). The mitral valve and the aortic ostium showed a severe acute endocarditis characterized by irregular friable vegetations (Fig. 1B). A voluminous necrotic area between the cortex and the medulla was detected in the right kidney (Fig. 1C). No other macroscopic lesions were observed.

Histological examination showed fibrotic mitral and aortic valve flaps surrounded by irregular endocardial vegetations composed of thick, amorphous masses of fibrin and scattered inflammatory cells (especially granulocytes). Myocardial infarctions were mainly composed of granulation tissue with occasional blood vessels, abundant fibroblasts, rare fibrocytes, neutrophils, and scattered necrotic foci (Fig. 1D). The subepicardial areas of the infarcts showed highly vascularized granulation tissue and occasional fibroblasts in an abundant fibrillar matrix. Several intramural small arteries showed severe vessel wall necrosis. A voluminous necrotic area infiltrated by inflammatory mixed cells was found in the kidney. Bacteriological analysis revealed multiple nonpathogenic bacteria probably due to poor tissue preservation. PCR-DNA testing to identify *Erysipelothrix* spp. revealed a positive line of 288 bp. (Fig. 2).
The occurrence of these unusual lesions underscores the need to improve diagnostic investigations using biomolecular laboratory assays to identify lesion etiology. Finally, this report corroborates previous findings that *E. rhusiopathiae* can cause infective endocarditis in sheep, though it is rarely the cause of death in this species.
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**References**


