What's your diagnosis?

MICE WITH ULCERATING LESIONS ON THE NOSE, LIMBS AND/OR TAIL.

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1 HISTORY AND PHYSICAL EXAMINATION:

An adult male mouse (Strain Sc/CpbU), was brought for euthanasia and necropsy. The animal showed a ruffled fur, conjunctivitis of the left eye and superficial ulcerating lesions on the nose and on digits of the paws. The animal originated from a conventionally housed colony of mice (C57Bl/U, Zo:Wk, Sc/CpbU). Anamnesis mentioned also a sick male C57Bl/U mouse in the same colony which showed an ulcerating lesion on the distal part of the tail. A wild mouse with an ulcerating tail was seen in the same room. Thorough examination of the colony revealed several mice with lesions on the nose, the limbs and/or tail. Because of the possibility of an ectromeliavirus infection it was advised to isolate the colony and to take appropriate hygienic precautions.

2 ECTROMELIA:

Ectromelia (mousepox) is a devastating disease of mice caused by an orthopoxvirus. The name ectromelia is derived from the grecian words ectroma= abortion melos = limb indicative for the amputation of tail and/or limbs due to the necrosis and inflammatory reaction occurring in the course of an epidemic ectromeliavirus infection.
Clinical course:
The clinical course of an infection with ectromeliavirus varies between an epidemic and an endemic form in a colony of mice, depending on the susceptibility of the host and the virulence of the virus. Resistant mice are C57Bl/6 and AKR. Known to be susceptible are DBA, Balb/C, A and C3H mice.
The epidemic clinical course is characterized by acute lethal infections without any clear clinical signs. In milder cases poxlesions may develop in the skin. Severe infection may lead to amputation of the tail and/or feet. The endemic course shows in ultimate form no clinical signs at all. Laboratory diagnostics reveal carriers of the virus or animals who have antibodies against it.

Pathogenesis:
The virus enters the body through small skin lesions or through lesions in the upper respiratory tract. Further multiplication takes place in the regional lymphnode. Having passed the efferent lymph vessels the virus enters the blood stream and causes a (primary) viremia. Liver and spleen become infected. Here the virus is multiplicated again, which results in a secondary viremia. The secondary viremia may cause acute death. In less severe cases several other organs become infected resulting in edemas, skin lesions and conjunctivitis. Predelection sites are the limbs and tail.

Postmortem:
In sick animals major findings are necrosis in spleen, liver and skin. Necrosis in thymus, lymphnodes, Peyer's patches, intestinal mucosa and genital tract also have been observed. A histological examination can reveal inclusionbodies in the cytoplasm of cells of lymphnodes, spleen, liver, pancreas and skin.

Diagnostics:
Clinical signs, autopsy and histology are useful help to set the diagnosis of ectromeliavirus infection in a colony of mice. Proof is the demonstration of antibodies against the virus or the demonstration of the virus itself. For this several laboratory diagnostics are available. A number of these methods are based on the fact that ectromeliavirus, being an orthopoxvirus, is closely related to vacciniavirus.

3 Laboratory diagnostics:
Because of the fact that in the colony mentioned several mice showed lesions on the nose, limbs or tail, diagnostics were primarily headed for ectromeliavirus:
Two mice were used for autopsy. Blood from the tail was collected from 9 mice. Sera were checked against vacciniavirus in an Immuno Fluorescence Assay (IFA).