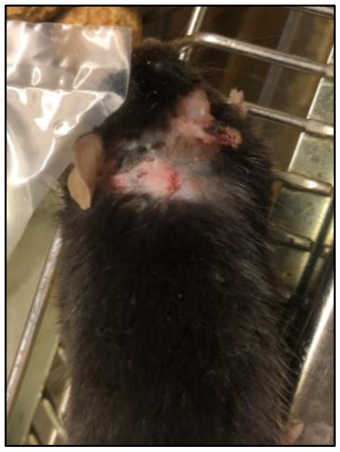
Ulcerative Dermatitis in Mice

Background



Ulcerative dermatitis (UD) is a common idiopathic non-infectious skin condition in mice that is characterized by hair loss, skin redness and itching that rapidly progresses to excoriation and ulceration of the skin as a result of self-trauma.[1] Due to the potential discomfort and pain associated with this condition and its high prevalence, UD is considered one of the most important welfare issues in lab mice.[1,2]

Etiology & Risk Factors

While the exact etiology of UD is still unknown, recent literature suggests it may be a type I hypersensitivity response.[3,4] The condition has been associated with various other pathologic processes.[5-7] Risk factors for the development of UD include:[1]

- C57BL/6 genetic background
- Increasing age – median age of onset is approximately 15 months[8]
- Sex – earlier onset and higher prevalence in females[9]
- High-fat diet consumption
- Changes in humidity

Investigators planning studies using C57BL/6-background mice, especially aging studies, should anticipate that UD lesions may develop in approximately 20% of the mice[8,10] and may require pharmacologic treatment or euthanasia.

Management

Early recognition and intervention is key for successfully managing UD cases. Lab personnel who are regularly handling their mice may be in the best position to identify early UD lesions that have a good prognosis for recovery. Report any health concerns to DCM for further evaluation so that we may assess the animal and recommend appropriate treatment(s).

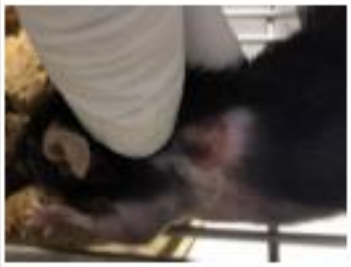
When DCM veterinary staff diagnose UD, they will assign a severity score and recommend treatment according to the table below. The rear toenails are routinely trimmed for all mice with UD lesions to minimize further self-trauma due to scratching.[2,9] Additional daily treatments may be required based on the severity. The DCM veterinarians are available to discuss prognosis and alternate treatment options when the standard agents are contraindicated based on the experimental use of the animal(s).

Experimental Confounds

Known sequelae of UD that may impact the animal's experimental value include:[1,11]

- Systemic changes in cytokines and inflammatory cell populations
- Lymphadenopathy
- Splenomegaly
- Abnormal activity and nesting behavior
- Reactive amyloidosis
- Secondary bacterial infection

Ulcerative Dermatitis Severity Scores

	Criteria (any one of the following:)	Prognosis	Treatment Plan
Mild	• Single or multiple small (<2mm), superficial dry crusts 	Good	• Nail trim • Recheck in 3-5d to assess progression • Follow up nail trims weekly thereafter
Moderate	• Erosion or ulcer ≤1cm cumulative size • Lesions on the face ≤3mm 	Fair	• Nail trim weekly • Moist lesions: Dakin's solution SID x7d • Dry lesions: recheck in 2-3d to assess progression
Severe	• Large (up to 2cm cumulative) ulcers • Deep/full thickness skin ulceration into subcutis • Facial lesions >3mm • Incessant scratching • Ocular globe injury 	Poor	• Nail trim weekly • Dakin's solution SID x7d • Carprofen SID • Enucleation of injured eyes • Euthanasia required if treatment is not elected
Terminal	• Extensive (>2cm) deep ulcers • Exposed muscle • Debilitating wound contracture 	Grave	• Nail trim • Euthanasia required

References: 2, 9, 8, 12-14

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