**Case Report**

**Ulcerative Dermatitis Lesions in Swiss Albino Mice: A Case Report (Laboratory Animal Medicine)**

**ABSTRACT**

**Aim**: Ulcerative dermatitis (UD) is a common, multifactorial skin condition in laboratory mice, typically reported in C57BL/6 strains. This report documents the first known occurrence of UD in Swiss Albino mice and evaluates the response to standard topical therapy.

**Presentation of the Case:** Four Swiss Albino mice at the Laboratory Animal Facility, AIIMS Rishikesh, presented with alopecia, pruritus, ulcerations, anorexia, and debility. Lesions appeared on the outer pinna, dorsal thorax, and caudal areas. The mice were isolated and treated with a topical cream containing Clobetasol, Neomycin, and Miconazole, applied twice daily for five days. Only one animal recovered; the condition of the other animals deteriorated, and they were humanely euthanized.

**Discussion**: This case highlights Swiss Albino mice as susceptible to UD and demonstrates the limited efficacy of common topical treatments. The rapid progression may involve pruritogenic mechanisms such as mast cell degranulation. Alternative treatments like gabapentin or sodium hypochlorite may offer better outcomes in refractory cases.

**Conclusion**: UD requires prompt identification and intervention. Poor response to therapy often results in euthanasia due to severe morbidity. Further research is essential to develop effective treatment strategies and understand strain-specific disease dynamics.

**Keywords*:*** Ulcerative dermatitis, Swiss Albino Mice, Multifactorial etiology, Topical treatments

**1. INTRODUCTION**

Ulcerative dermatitis (UD) is a common idiopathic non-infectious condition of several strains of laboratory mice characterized by alopecia, redness, and pruritus, leading to excoriations and skin ulceration [1]. The high incidence among C57BL/6 strains indicates some sort of genetic involvement [2]. Although UD's exact etiology is unknown, it is considered multifactorial. Various risk factors associated with the development of UD include a nutritionally deficient diet, a high-fat diet, season, age, sex, and parasitism [3]. Seasonal changes in temperature and humidity play an important role in the onset of UD [4]. It initially presents as alopecia over the neck and trunk, which gradually worsens into skin ulcerations on the neck, head, ears, and upper back, ultimately causing severe dermatitis [5]. Multiple treatment strategies have been employed to treat ulcerative dermatitis, including restricted fat diets, topical chlorhexidine, corticosteroid-antimicrobial combinations, calamine lotion, and antibiotics with limited or incomplete cure. Use of Gabapentin, a γ-aminobutyric acid (GABA) antiepileptic drug which is used to treat neuropathic and inflammatory pain, has been found to have limiting effects on the clinical signs of UD [6].

**2. PRESENTATION OF CASE**

A colony of four Swiss Albino mice housed at the Laboratory Animal Facility, All India Institute of Medical Sciences, Rishikesh, presented with clinical signs of ulcerative dermatitis, including alopecia, pruritus, ulcerations, anorexia, and debility. Lesions were observed over the outer pinna, dorsal thorax, and caudal areas (Fig. 1). The affected animals were isolated and treated topically with a combination cream containing Clobetasol, Neomycin, and Miconazole, applied twice daily for five consecutive days. Despite treatment, only one mouse showed clinical improvement. The remaining three animals exhibited progressive deterioration and were humanely euthanized using a high dose of pentothal followed by cervical dislocation due to their moribund condition. This case represents the first documented occurrence of ulcerative dermatitis in Swiss Albino mice.



**Figure 1**: Ulcerative Lesions

**3. DISCUSSION**

Ulcerative dermatitis (UD) remains a challenging condition in laboratory mice due to its idiopathic and multifactorial nature, commonly affecting C57BL/6 mice [6]. The present case in Swiss Albino mice highlights not only a rare strain-specific presentation but also the limited efficacy of commonly used topical treatments. The therapeutic regimen consisting of Clobetasol (a potent corticosteroid), Neomycin (an aminoglycoside antibiotic), and Miconazole (an antifungal agent) was administered twice daily for five days. While one animal showed clinical recovery, the remaining mice exhibited progressive deterioration, eventually reaching a moribund state necessitating humane euthanasia. Ulceration appeared rapidly, probably due to intense scratching because of the pruritogenic properties of the histamine released from mast cell granules [7]. 0.005% sodium hypochlorite solution was found to be an effective topical treatment alternative for UD in C57BL/6 mice [8]. Oclacitinib, a janus kinase (JAK) inhibitor, when applied topically have been shown to improve an induced model of dermatitis in mice [9].

This outcome underscores the variability in treatment response and the potentially aggressive course of UD in certain individuals. The poor prognosis in the majority of the affected animals, despite timely isolation and intervention, points to the complexity of the disease and suggests that topical therapy alone may be insufficient in advanced or multifactorially influenced cases [10]. The failure of treatment in three of the four animals emphasizes the importance of early diagnosis and highlights the need for exploring adjunct or systemic therapies, such as neuropathic pain modulators like gabapentin [5], which have shown promise in alleviating clinical signs in previous studies. Dupilumab biosimilars have been shown to be effective in treating atopic dermatitis in a knock-in mouse model [11]. Dupilumab, an IL-4 and IL-13 antagonist, has been shown to be effective in treating moderate-to-severe atopic dermatitis [12].

Furthermore, the occurrence of this condition in Swiss Albino mice broadens the strain susceptibility spectrum and calls for heightened awareness and surveillance in facilities using this commonly employed strain. These findings collectively suggest that more comprehensive studies are required to evaluate the pathophysiology and optimize treatment protocols for ulcerative dermatitis in laboratory mice.

**4. CONCLUSION**

This study documents the first case of ulcerative dermatitis in Swiss Albino mice, highlighting their susceptibility to the condition. Limited response to topical treatment emphasizes the need for early diagnosis and alternative therapies. Humane euthanasia is necessary for non-responsive cases to prevent suffering, underscoring the need for further research on effective management strategies.

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