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Diagnostic and therapeutic management of feline scabies

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Abstract

Feline scabies or Notoedric mange is a disease in cats caused due to a tiny sarcoptic formis mite *Notoedris cati*. The study was conducted to study the symptoms and diagnosis of Feline scabies. The study was conducted on 12 cats of various ages, breed and sex with anamnesis of normal appetite, intensely pruritic, dry crusted and alopecic lesions on the ear margins. Clinical examination of these cats revealed debilitated condition, poor skin coat, foul smelling, crusting and bleeding tracts, alopecia and scaling. Collection of Skin scrapings were performed from the periphery of the skin lesions and digested with 10 percent KOH. These skin scrapings were examined which revealed the infestation of *Notodres cati*. Hemato-biochemical studies revealed slight decrease in Red Blood Cells (RBC) and increase in White Blood Cells (WBC) significantly among affected cats. Biochemical parameters were within the normal range with mild decrease in albumin levels. These affected cats were successfully treated with Selamectin spot on preparation along with supportive therapy which showed an uneventful recovery after 14 days post treatment with improvement in clinical signs.

Keywords: Feline scabies, Red Blood Cells (RBC), White Blood Cells (WBC)

Introduction

Feline Scabies is one of the highly contagious and zoonotic skin disease affecting many animals, including cats, which bites the animal's skin and cause itching, flaking, inflammation and loss of hair. Feline Scabies is caused by obligate parasite *Notodres cati*, a member of Sarcoptidae family and it is one of the disease seen commonly in wild animals in natural reserves and captivity [Singh *et al.*, 2003] ^[9]. The clinical symptoms of feline scabies include hyperkeratosis, intense pruritus, skin lesions like crusts are noticed on the the ears and face [Fadok *et al.*, 2006] ^[3] limbs, neck region and other parts of the body in heavy infestation. These clinical symptoms are often aggravated due to invasion of secondary bacterial infections which are initiated due to excoriations resulted from self trauma or itching [Sivajyothi *et al.*, 2015] ^[10]. Feline scabies can be diagnosed from superficial skin scrapings by performing examination of the mite microscopically. Treatment of Feline Scabies is initiated with Ivermectin. But due to various contraindications and increasing resistance to the drug caused more limitations are seen. Alternatively, Selamectin can be used which is a antiparasitic drug of avermectin, semi-synthetic group which is similar to ivermectin structurally and possess greater safety levels, thus making Selamectin as an ideal drug in the treatment of Feline Scabies along with other parasitic skin disorders (Bishop *et al.* 2000) ^[11].

Materials and Methods

During this investigation, twelve Nondescript cats of various age groups resented with history and clinical signs of alopecia, erythema, pruritus and scabs were included in the study. Skin scrapings from these cats were collected after removing the hair around the lesions and the skin was gently squeezed and released. Many skin scrapings of 1 cm² of suspected skin infection was collected towards the direction of the hair growth. During skin scrapings, affected skin was squeezed intermittently or constantly to collect mites from the superficial surface or inner depth of the follicles to the. Slide containing scrapings were generally mixed with paraffin oil or mineral and observed under the microscope with a cover slip at low magnification for recognition of mites. Blood samples were collected from the affected cats into two tubes *viz.*, Plain tubes without anticoagulant and EDTA vaccutainers.

Blood collected with EDTA as anticoagulant was used for hematological estimation, while, blood collected from Plain tubes was used for Serum separation. Serum Samples collected were used to estimate the values of Aspartate aminotransferase (AST), Alanine transaminase (ALT), Albumin, Total protein, globulins, Blood urea nitrogen (BUN), and Creatinine by using specific test kits. Scabies affected cats were treated with Selaforte (Selamectin spot on) topically at the rate of 6mg per kg body weight and applied to

the affected areas along with supportive therapy of Nutricoat advance syrup one TSP two times a day per orally for one month.

Results and Discussion

In the present study, cats affected with scabies exhibited clinical signs of alopecia, erythema, severe pruritus, scaling and crusts especially on the face, nose and the ears (Fig-1-2).



Fig 1: Alopecia & Crusts on the ear pinna



Fig 2: Crusts with erythema on the nose

From the affected skin lesions, scrapings were collected and examined which revealed presence of *Notoedres cati* mites under a light microscope (Fig-3). After one week of the treatment, there was a reduction of pruritus with reduction of crusts was observed and the lesions start ed improving. After

two weeks, areas with alopecia have been replaced with hair, absence of pruritis, reduction in the crusts and the skin looked normal. During third week, these affected cats were recovered with negative skin scrapings results.



Fig 3: Microscopic examination of Skin scrapings revealed *Notoedres cati* mite

Hematological changes revealed a significant decrease in red Blood Cells (RBCs) along with a non-significant change in the Packed Cell Volume (PCV), significant elevation of White Blood Cells (WBCs) eosinophils as compared with the healthy control group. Biochemical values in the

investigation, revealed normal values of aspartate aminotransferase (AST), alanine transaminase (ALT), Total protein, along with decreased Albumin and increased globulin in the cats affected with mange as compared with the control dogs (Table 1 and 2).

Table 1: Mean values of hematology among healthy and Scabies affected cats.

S. No	Parameter	Healthy Control	Scabies affected cats
1	Hemoglobin (gm/dl)	12.33±1.22	11.62±1.34**
2	Total erythrocyte count (x10 ⁶ /μL)	7.59±0.13	7.24±1.12**
3	Total Leucocyte Count (x 10 ³ /μL)	9.26±0.28	10.93±1.28**
4	Packed Cell Volume (%)	42.23±0.32	41.85±1.39
5	Neutrophils (%)	53.28±0.27	55.64±1.53*
6	Lymphocytes (%)	30.17±1.46	30.01±1.17
7	Monocytes (%)	1.03±0.29	1.05±0.83
8	Eosinophils (%)	2.43±0.88	2.67±0.20
9	Basophils (%)	1.22±0.14	0.36±0.52

** significant ($p < 0.01$), * significant ($p < 0.05$)

Table 2: Mean values of biochemical values in healthy and Scabies affected cats

S. No	parameter	Healthy Control	Scabies affected cats
1.	ALT(U/L)	32.37±1.39	32.14±0.48**
2.	AST(U/L)	41.51±0.83	42.72±0.36**
3.	ALP(U/L)	53.42±0.35	52.79±1.52**
7.	Total Protein (g/dl)	6.51±1.43	6.26±0.45**
8.	Albumins (g/dl)	2.31±0.23	2.12±0.02**
9.	Globulins (g/dl)	3.24±0.26	3.34±0.12*

** significant ($p < 0.01$), * significant ($p < 0.05$)

Feline Scabies is a contagious disease of cats which causes alopecia, crusts, lesions involving face, ears, neck and the lesions spread entire body, if the condition is not identified and treated (Scott *et al.*, 2001) [8]. During the present investigation, lesions were pruritic with alopecia and presence of crusty lesions on the face, ears which should be diagnosed early by microscopic examination of skin scrapings. Affected cats revealed various skin lesions like excoriations, papules, crusts, scales, alopecia, erythema and lichenification (Foil 2003) [5]. These lesions appearing on the margins of the ear pinna usually on the head and neck, legs and perineum spreads at faster rate which is aggravated by habits of self-grooming and sleeping in a curled position. If feline scabies is not treated at early stages in young and adult cats could be fatal and may further gets complicated by secondary bacterial infection. In the present investigation, the mean hematology values of affected cats showed a significant decline in the Red Blood Cells (RBCs) along with a non-significant decrease in the Packed Cell Volume (PCV), Significant elevation of White Blood Cells (WBCs) and eosinophils when compared with the healthy control group. While, biochemical values revealed no significant changes in Aspartate aminotransferase (AST), Alanine transaminase (ALT), Total protein, globulin along with decrease in albumin in the cats affected with Scabies as compared with the healthy control. Decrease in albumin levels and increase in globulin levels with normal Total protein levels in the present study attributed to the albumin loss through skin injury. Albumin is said to be a Negative Acute phase protein which gets altered during the inflammation process [Bishop, 2000] [1]. Selamectin belongs to avermectin group which usually binds to glutamate-gated chloride channels irreversibly in the Nervous system of mites and causes opening of the channels continuously. This is responsible for an elevated levels of chloride concentration ion in the nerve cells and which prevents neurotransmission leading to hyperpolarization (Gupta *et al.*, 2019) [7].

Conclusion

Selamectin represent a highly efficient alternative for the management of Feline Scabies or Notoedric mange in cats.

Conflict of Interest

The authors declare that they have no Conflict of Interest.

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