Histopathological Changes in Canine Demodicosis

Moneesh Thakur1*, Hriyadesh Prasad1, R.S. Arya2, Y.D. Singh2, Jayappa Kiran2, Abhijit Deka2, Kalyan Sarma1, Albert Debbarma1, Arindam Bhowmik1 and Prasenjit Debnath1

1Department of Veterinary Medicine, 2Department of Veterinary Pathology, College of Veterinary Sciences and Animal Husbandry, Selesih, Aizawl, Central Agricultural University, Mizoram-796015, India

*Corresponding author

An investigation was carried out to study the pathological changes in canine skin due to demodicosis. The predominant changes included folliculitis, perifolliculitis, furunculosis, acanthosis and hyperkeratosis, parakeratosis and hyperplasia of superficial epidermis. The cut sections of mites were seen in hair follicles, stratum corneum, sweat glands, sebaceous glands as well as in the dermis and epidermis with mild to heavy mononuclear cell reactions. There was ulceration of the epidermis in the severe pustular lesions.

Keywords: Dogs, Demodectic mange, Skin, Histopathological changes

Introduction

Demodicosis (red mange, follicular mange, acarus mange) is relatively a common disease of dogs. The lesions are caused by the presence of greater than the normal numbers of the mite Demodex canis, a cigar shaped parasite. The mite spends its entire life cycle on the dog, inhabiting the hair follicles and occasionally the sebaceous and epitrichial sweat glands. It is widespread, inflammatory, chronic contagious and debilitating skin disease of canines (Chattergee, 1989). A shorter and broader form of the mite has also been reported but is considered to be uncommon (Henfrey, 1990). The present paper reports on histopathological changes in dogs having natural infection of Demodex.

Materials and Methods

The canine cases with the dermatological problem presented at the Teaching Veterinary Clinical Complex, College of Veterinary Sciences and Animal Husbandry, Selesih for a period of nine months were utilized for this study. For the detection of demodicetic mange in skin, deep skin scrapings were collected.
The adult mites, nymphs, larvae and eggs were identified as per description of Nutting and Desch (1978), Soulsby (1982) and Medleau (1990). A total of 21 dogs were found positive for demodicosis.

**Results and Discussion**

For histopathological studies, skin biopsies were collected from dogs affected with demodicosis as well as healthy areas for comparison. The affected area was gently cleaned with 70% alcohol and the site was desensitized with local anaesthetic solution (Lignocaine hydrochloride, 1-2%) subcutaneously (Wilkinson and Harvey, 1994). Punch biopsy instrument (5mm diameter ‘Bakers’ biopsy punch) was placed on the area of skin to be biopsied and the punch was drilled into the tissue with rotary motion in one direction applying moderate pressure (Muller and Kirk, 1969; Nesbitt, 1983). The punch was withdrawn and the circular piece of skin was snipped off from the punch by a sterile scalpel while holding the piece of skin with a plain forceps. The wound was closed with one stitch. The biopsy of the skin thus obtained was preserved in 10% formalin. The biopsy samples were processed for paraffin sectioning method as described by Luna (1968). The paraffin sections of 6-8micron thickness were cut and stained by routine Mayer’s Haematoxylin and Eosin stain and Periodic Acid Schiff (PAS) stain (Drury and Wallington, 1980).

1. This picture is showing anatomical architecture from the dermis part of the skin where we can appreciate dilated hair follicle with cut section of parasite. Also can be termed as folliculitis or mural folliculitis.

2. This picture is showing anatomical architecture from the dermis and epidermis part of the skin where we can appreciate dilated hair follicle with cut section of parasite. Also can be termed as folliculitis or mural folliculitis. We can also appreciate mild degree of hyperkeratrisation.

3. This picture is showing anatomical architecture from the dermis and epidermis part of the skin where we can appreciate dilated and disrupted hair follicle without any parasite.
4. This picture is showing anatomical architecture from the dermis and epidermis part of the skin where we can appreciate dilated hair follicle. We can also appreciate hyperkeratisation.

5. This picture is showing anatomical architecture from the dermis and epidermis part of the skin where we can appreciate dilated and unusual shaped hair follicle. We can also appreciate mild degree of hyperkeratisation. There are also some necrotic masses are appreciated.

6. This picture is showing anatomical architecture from the dermis part of the skin where we can appreciate dilated hair follicle with cut section of parasite. Also, can be termed as folliculitis or mural folliculitis. There is severe infiltration of inflammatory cells and necrotic mass and debris. We can also appreciate hyperkeratisation. Due to the dilatation of the hair follicle the sweat gland got compressed.

7. This picture is showing anatomical architecture from the dermis part of the skin where we can appreciate dilated hair follicle with cut section of parasite. Also, can be termed as folliculitis or mural folliculitis. There is severe infiltration of inflammatory cells and necrotic mass and debris. We can also appreciate high degree of hyperkeratisation within follicles leading to dilatation. Due to the dilatation of the hair follicle the sweat gland got compressed.
References

Chattergee, A. 1989. Skin Infections in Domestic Animals. Moitri Publications, Calcutta, pp.1-162.

Drury, P.A.B. and Wallington, E.A. 1980. Carleton’s Histological Technique. (5th edn.) Oxford University Press, Oxford, pp. 237.

Henfrey, J.I., 1990. Canine demodicosis. In Practice., 12: 187-192.

Luna, L.G. 1968. Manual of Histologic Staining Methods of Armed Forces Institute of Pathology. (3rd edn.), McGraw Hill Book Company, New York, pp. 258.

Medleau, L.1990. Symposium on managing chronic canine pruritis. 1. Managing cases of chronic pruritis that have not respond to steroids. 2. Linking chronic steroid responsive pruritis to allergies. 3. Evaluating canine pruritis that no longer responds to steroid therapy. Vet Med., 85: 242-283.

Muller, G.H. and Kirk, R.W. 1969. Small Animal Dermatology, II W.B. SaundersCo., Philadelphia, P.A.

Nesbitt, G.H. 1983. Canine and Feline Dermatology: A Systematic Approach. Lea and Febiger, Philadelphia.

Nutting, W.B. and Desch, C.E. 1978. Demodex canis: redescription and re-evaluation. Cornell Vet. 68: 139-149.

Soulsby, E.J.L. 1982. Helminths, Arthropods and Protozoa of Domesticated Animals. (7th edn.), Bailliere Tindall, a Division of Cassell Ltd., London. Pp. 476-479.

Wilkinson, G.T. and Harvey, R.G. 1994. Colour Atlas of Small Animal Dermatology- A Guide to Diagnosis (2nd edn.), Mosby-Wolfe Bar.

How to cite this article:

Moneesh Thakur, Hriyadesh Prasad, R.S. Arya, Y.D. Singh, Jayappa Kiran, Abhijit Deka, Kalyan Sarma, Albert Debbarma, Arindam Bhowmik and Prasenjit Debnath. 2019. Histopathological Changes in Canine Demodicosis. *Int. J. Curr. Microbiol. App. Sci.* 8(03): 2176-2179. doi: https://doi.org/10.20546/ijcmas.2019.803.260