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Histopathological study on a rare case of ear margin seborrheic dermatitis in Great Dane dog

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Abstract

The present study was conducted at Veterinary College Hospital, Hebbal, Bengaluru. A female 8 years old Great Dane dog presented to Department of Veterinary Medicine, Veterinary college Hebbal, Bengaluru having cutaneous or skin diseases which was chronic in nature and refractory to the ongoing treatment. Clinically, the case was presented with typical lesions and was confined to margins, present on both lateral and medial margins of pinnae which were exfoliative brownish colour, greasy and waxy. Partial alopecia was present with seborrheic odour. Histology was characterized by severe parakeratotic hyperkeratosis, follicular keratosis being a prominent feature suggestive of ear margin seborrheic dermatitis.

Keywords: Biopsy, seborrheic dermatitis, histopathological changes

Introduction

The skin forms an anatomical boundary between the body and its environment. It is the largest system in the body which provides protection against, physical, chemical and microbial injury, aids in thermoregulation, conservation of water, synthesis of vitamin D and sensory function. Hence, integument makes the principal organs of communication between the animal and its surroundings (Garland, 2013)^[4].

Skin being the largest organ in the body is likely to be influenced by a plethora of infectious and non-infectious, environmental agents. In several veterinary facility 20 percent to 75 percent of dogs presented at the small animal clinics are known to be with a dermatological complaint (Scott *et al.*, 2001)^[7].

In dogs, the skin diseases could be due to parasitism, bacterial, fungal, allergies, immunological diseases, nutritional related dermatosis, hormonal disorders and cancers (Nichita and Marcu, 2010)^[6].

Diagnostic approach for skin diseases includes obtaining of detailed history with thorough physical and dermatological examination. This evaluation provides a centre stage in getting precious information which guides the process of investigation, which includes running of therapeutic trials over a period of time (Garland, 2013)^[4].

The laboratory procedures employed for diagnosis of dermatological cases include examination of skin scrapings, tape impressions and cytological smears. For a dermatoses, which is refractory to apparent rational therapy, skin biopsy is reported to be mandatory. Obtaining a skin biopsy specimen is one of the most common and important procedures performed by dermatologists, and histologic examination of a biopsy specimen may represent the most informative and cost-effective test in all of medicine, yet little curriculum time is devoted to this important procedure (Elston *et al.*, 2016)^[3].

Clinical examination

A Female 8 years old Great Dane dog was presented to Department of Veterinary Medicine, Veterinary college Hebbal, Bengaluru, having cutaneous or skin lesion confined to ear margins.

Upon clinical examination, typical lesions was revealed and were confined to ear margins only, which were present on both lateral and medial margins of ear pinnae and were found to be exfoliative in nature and brownish in colour, appeared greasy and waxy. Partial alopecia was present with typical seborrheic odour [Figure 1].

Since the condition was rare, unknown, found to be recurrent and refractory to ongoing treatment, the case was further processed for biopsy and histopathology examination.

Methods and Materials

Punch biopsy

The dogs showing dermatological lesion was selected to perform skin punch biopsy. The hair over and around the site to be biopsied was clipped and swabbed with 70% alcohol taken care not to disturb the surface lesion. Mostly primary skin lesion and transition lesion were selected for biopsy. Representative tissue samples were obtained by using 6 mm punch biopsy [Punch biopsy needles-M/s Accu Sharp-6 mm punch biopsy needles. (Lot number: BIPU0802223)] under local anaesthesia using 2% lidocaine 2mg/kg body weight, the punch biopsy was inserted using combination of forward pressure and unidirectional rotation motions and was advanced to the depth of the subcutaneous layer. The detached piece of skin was then gently lifted at one edge using the point of a sterile needle or fine rat toothed forceps and placed in container with at least 10 times their volume of 10% phosphate buffer formalin.

Histopathology

The biopsied sample was fixed in 10% neutral buffered formalin immediately and processed by routine paraffin embedding technique. Sections of 4-5 microns were cut using Leitz microtome with disposable blades and stained with Haematoxylin and Eosin (Luna, 1968).

Results

A female 8 years old Great Dane dog was presented with recurrent lesions on the ear margins. No such age, breed and sex predilection was noticed due to very low incidence. Upon clinical examination, typical lesion was revealed and was confined to ear margins only. Since the condition found to be rare, recurrent and refractory to ongoing treatment, the case was further processed for biopsy and histopathology examination.

Histopathology of biopsy sample revealed severe parakeratotic hyperkeratosis and predominantly neutrophilic debris crusting on the strata corneum was noticed. Follicular keratosis was a prominent feature in the particular case, keratin distended in to the follicular ostia and found encircled around the protruding hair shaft to produce "Follicular fronds" [Figure 2 and 3], suggestive of typical ear margin seborrheic dermatitis. Superficial dermis inflammation was variable with lymphocytes, monocytes and neutrophils but adnexal structures were found to be intact with hair shaft.

Discussion

Glossy coat and healthy skin are the hallmarks of cosmetic appearance of dogs. The integumentary system is one of the largest systems in the body, at the same time they are influenced by plethora of infectious and non-infectious agents. Skin being largest organ but have limited range of response, their pattern for different skin diseases is found in a similar manner. Thus, diagnosis makes quiet challenging in complicated versions of skin diseases.

The name seborrhea derived from waxy appearance, may be a manifestation of an abnormality in keratinization or sebum

production as reported by Campbell (1994)^[2], Gross *et al.* (2005)^[5] and Bradley *et al.* (2013)^[1].

Histology was characterized by severe parakeratotic hyperkeratosis and neutrophilic debris crusting on the strata corneum was predominantly noticed. Follicular keratosis was a prominent feature, keratin distended follicular ostia led to pseudo papillomatous appearance. Keratin encircled around protruding hair shaft to produce "Follicular fronds" The current observation was correlated well with earlier workers (Campbell, 1994; and Gross *et al.*, 2005)^[2, 5].



Fig 1: Photograph of ear margin seborrheic dermatitis showing partial alopecia with adherent scales confined to medial and lateral ear margins of pinnae.

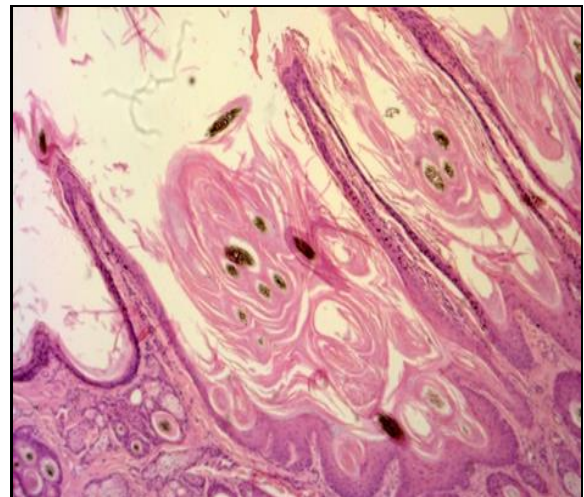


Fig 2: Photomicrograph of ear margin seborrheic dermatitis showing follicular fronds. H&E X50

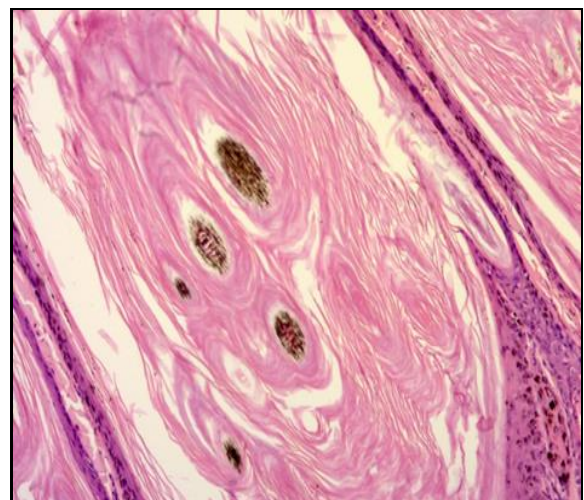


Fig 3: Photomicrograph of ear margin seborrheic dermatitis showing keratin casts encircling protruding hair shaft. H&E X200

Conclusion

Pet practices constitute a major portion of skin ailments with dermatological diseases. Dermatological diseases make an important part of daily clinical practice; require specific diagnosis for suitable therapeutic interventions. In the present case of unknown origin and pathology; along with appropriate history and clinical examination, the skin biopsy served as a gold standard technique and imparted collateral and confirmative evidence to conclude the diagnosis as Ear margin seborrhoea.

Approval

The study protocol was reviewed and approved by Institutional Animal Ethical committee (IAEC), Veterinary college, Hebbal, Bangalore and the procedure was designed to avoid or minimize discomfort, distress and pain with IAEC approval No. VCH/IAEC/2022/39 dated: 10.08.2022.

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