

Subcutaneous cellulitis of the thigh due to grass awn migration in a German shepherd dog

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Abstract Cellulitis is a severe, deep, suppurative infection that is poorly defined and tends to dissect through tissue planes. When a foreign body enters the body, white blood cells attack the site and fight the invading agent. Sometimes, this collection of blood cells forms a packed of pus or an abscess within the body's tissues, organs, or confined spaces. Chronic sinus tracks have been reported previously in the lumbar, paralumbar, and flank skin area in hunting dogs with grass awn and other migrating foreign bodies. Surprisingly, little information is published on histopathological changes about grass awn migration subcutaneously. This report describes histopathological characteristics of subcutaneous cellulitis of the thigh due to grass awn migration in a German shepherd dog.

Keywords Grass awn · Subcutaneous cellulitis · Histopathology · German shepherd dog

Introduction

Cellulitis is a severe, deep, suppurative infection that is poorly defined and tends to dissect through tissue planes (Yager and Scott 1993). When a foreign body enters the body, white blood cells attack the site and fight the

invading agents. Sometimes, this collection of blood cells forms a pack of pus or an abscess within the body's tissues, organs, or confined spaces (Anderson et al. 1982; Brennan and Ihrke 1983). Occasionally, these masses form permanent tracts with discharges out of the body termed as fistulae (Anderson et al. 1982). Chronic fistulous tracks or chronic sinus tracks commonly occur in small animals secondary to the presence of foreign bodies (Anderson et al. 1982). Chronic sinus tracks have been reported previously in the lumbar, paralumbar, and flank skin area in hunting dogs with grass awn and other migrating foreign bodies (Anderson et al. 1982; Brennan and Ihrke 1983). The most common error in the management of soft tissue foreign bodies is failure to detect their presence. Foreign bodies which have radiolucent structure cannot be seen by plain radiographic evaluation. The most common substances which are usually missed are thorns and wooden splinters (Al-Zahrani et al. 1995). Despite the high frequency of problems encountered secondary to grass awn migration, surprisingly little information is published on histopathological changes about grass awn migration subcutaneously (Bell 1978). This report describes histopathological characteristics of subcutaneous cellulitis of the thigh due to grass awn migration in a German shepherd dog.

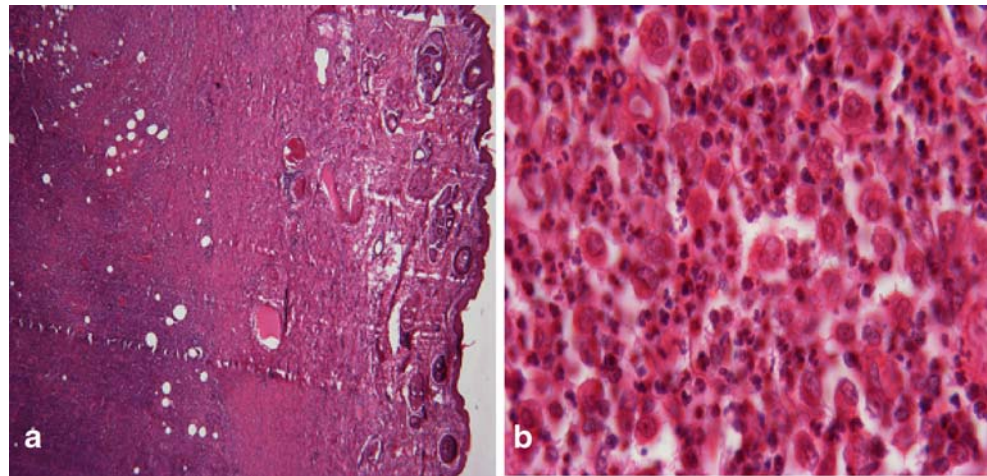
Case history and treatment

A 5-year-old male German shepherd dog was referred to the clinic of the School of Veterinary Medicine due to multiple ulcerated nodules in the medial side of the thigh. There were pus-draining fistulous tracts in the affected region. In clinical examination, temperature, pulse rate, and respiratory rate and cell blood count were in the normal range. A plain radiograph was taken and the radiograph

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Fig. 1 Diffuse infiltration of mixed inflammatory cells especially neutrophils and macrophages. **a** H & E, $\times 40$ and **b** H&E, $\times 100$



revealed the limits of sinus tracks without any foreign body. Therefore, systemic antibiotic therapy (Co-amoxyclave[®], 12 mg/kg, PO, q 12 h, for 2 weeks tab, Co-amoxyclave[®] 625_{mg}, Abidi, Iran) was administered. After 1 month, the case was referred to the clinic with progress of wound and pus discharge.

According to case history and clinical examination findings, chronic subcutaneous cellulitis was diagnosed and the dog was subjected to surgical excision of the lesion.

The food was withheld for 24 h and water for 12 h before surgery. The dog was prepared for aseptic surgery. The dog was sedated with acetylpromazine 2% (0.2 mg/kg, IM; Acepromazine[®], Nasr Fariman, Iran) and anesthesia induced with ketamine (20 mg/kg, IV) and Acepromazine[®] (0.1 mg/kg, IV) and maintained with ketamine (IV; 10 mg/kg, IV). To allow for maximal visualization, the dog was positioned in dorsal recumbency. The fistulous was dissected bluntly from surrounded soft tissues and removed (en block). Skin was sutured with no. 2/0 nylon in an appositional interrupted pattern. Co-amoxyclave[®] (12 mg/kg, PO, q 12 h, for 2 weeks tab, Abidi, Iran) and Flunixin meglumine (1.1 mg/kg, IM, Once daily) were administered postoperatively. The patient was hospitalized for 3 weeks. The dog made an uneventful recovery.

For histopathological examination, tissue samples were taken from the excised mass and fixed in 10% neutral buffered formalin. They were processed and embedded in paraffin. Sections of 5- μ m thickness were cut and stained with hematoxylin and eosin.

Histopathology revealed a diffuse infiltration of mixed inflammatory cells especially neutrophils and macrophages (Fig. 1a,b) in the subcutaneous tissue of the affected skin with some sections of grass awn (Fig. 2). Hemorrhage, numerous hemosiderophages, and evidences of granulation tissue formation such as fibroplasia and angiogenesis were also observed.

Discussion

All hunting and working breeds have the highest prevalence of grass awn problems with the exception of Airedale Terriers. Their increased prevalence might be explained by an increased likelihood of grass awn contact in fields. In addition, longer coats would probably predispose these breeds to awn retention (Brennan and Ihrke 1983). The clinical syndromes produced by grass awn migration are varied, as evidenced by the numerous locations in which awns may lodge and the resultant disease produced (Bell 1978). If the grass awn can be easily visualized, as in cases where the external ear or conjunctiva is involved, removal may be routine. However, if an awn gains access to a part of the body where visualization is not possible, such as in cases where the migration is subcutaneous or visceral, removal or even documentation of a grass awn presence may be difficult. Clinical management is most difficult in cases in which the awn has gained access to the thoracic cavity or to the area adjacent to the lumbar vertebrae

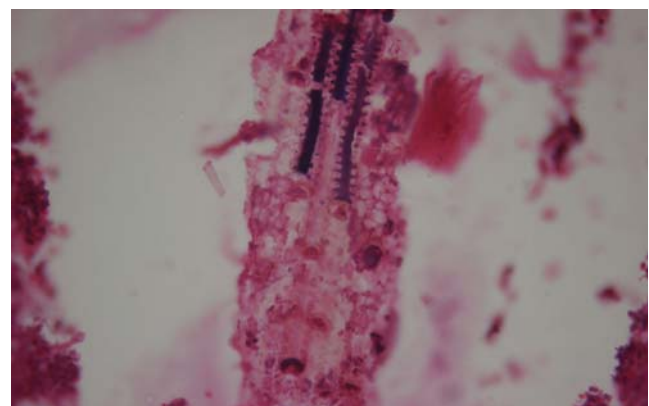


Fig. 2 Some sections of grass awn of affected area. H & E, $\times 100$

(Brennan and Ihrke 1983). Foreign bodies which have low radiographic structure cannot be seen by plain radiography and are therefore radiolucent (De Flaviis et al. 1988). The most common substances which are usually missed are thorn and wooden splinters (Anderson et al. 1982; Brennan and Ihrke 1983). In this report, a plain radiograph was also taken and the radiograph did not reveal any foreign body presence that can be related to radiolucency of foreign body. Therefore, at the second referral, the case referred to surgical excision of fistulous tract and histopathological evaluation of the excised mass.

Based on the results of this study and other related studies, subcutaneous cellulitis due to grass awn has to be considered as a differential diagnosis in cases with chronic skin lesions.

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