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An Unusual Growth of Migrating Foxtail Foreign Body In A Dalmatian Dog: A Case Report

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Abstract

A 6-year-old spayed female Dalmatian was referred following a two-day history of purulent discharge in the medial aspect of left femur. The wound was irrigated, and antibiotic treatment was continued for 30 days with a partial response. Due to extension of the fistula into the pelvis and the long distance to the end part of the fistula, surgery did not seem feasible. By day 40 a bump appeared at the wound location. After the foreign body was removed from this bump, it was found to be a 30 cm foxtail that had grown along the fistula path. Within five days of removing the foreign body, marked improvement was noticed with a decrease in purulent discharge, and the dog's attitude improved considerably. Numerous reports have been of plant-like foreign objects migrating within a dog's body. In this particular case, the significant plant growth inside the dog's body was noteworthy.

Keywords: dog, fistula, foreign body, foxtail, grass awn

1. Case History

Seed heads of various types of grass are called foxtail due to their brush-like appearance (Philp, Epstein, & Hopper, 2022). Green foxtail (*Setaria viridis*) is widely distributed in various parts of the world and adapts rapidly to local conditions (Dekker, 2003; Fukunaga & Kawase, 2024; Griffeuille *et al*., 2023). Plant-derived objects (e.g., the grass awn), are the usual cause of foreign body-related diseases in animals. They migrate easily due to their shape, facilitating their forward movement (Dennis, Pearce, Norrdin, & Ehrhart, 2005). In most cases, this disease occurs in young to middle-aged dogs and in the summer months (Caivano, Corda, Corda, Moretti, & Bufalari, 2023; Philp *et al*., 2022). Some breeds are more susceptible to foxtail disease than others, including Springer Spaniels, Golden Retrievers, Brittany Spaniels, and Airedale Terriers and it is less prevalent in German Shepherds, Miniature Poodles, and Dachshunds (Schultz & Zwingenberger, 2008).

Pathogenicity of the grass awns is usually related to secondary bacterial infections at the site (Corbett & Rissi, 2023; Schultz & Zwingenberger, 2008). These grass-awn foreign bodies are mostly reported to occur in the external ear canal, interdigital region, third eyelid, and nasal cavity. They were also seen in the eye and orbit, cranium, spinal canal, and peritoneal and

thoracic cavities (Doyle, Allen, & Ettinger, 2011). This paper discusses the clinical course of an unusual case of femoral region intramuscular foxtail foreign body in a Dalmatian dog.

2. Clinical Presentation

A 6-years-old spayed female Dalmatian was referred to the Small Animal Hospital, Faculty of Veterinary Medicine, University of Tehran (FVM-UT), following a two-day history of hyporexia, fever, lameness, and an open wound with Purulent discharge in the medial aspect of the left femur. The wound was irrigated and no foreign object was detected. Treatment consisted initially of injectable first-line antibiotics (Cefazolin 22.00mg/kg, IM, q8h, Loghmanpharma, Tehran, Iran). Antibiotic treatment was continued for 10 days with partial response. The purulent discharge decreased with antibiotic therapy; however, it was resumed after the cessation of treatment. Subsequently, the regimen was changed to Clindamycin (11.00mg/kg, IM, q12h, Aburaihan Pharmaceutical Co, Tehran, Iran) and Ampicillin (15.00mg/kg, IM, q8h, Daanapharma, Tabriz, Iran). Despite the change in the treatment regimen, the therapeutic response was temporary and there was no complete resolution of signs by day 30 of treatment.

3. Diagnostic testing

for further evaluation of the condition of the disease and the extent of the open wound, a pre-contrast and post-contrast CT scan of the left hindlimb was taken from the dog. There was a rim-enhanced intramuscular draining tract in the medial muscular region of the left femur which extended at the level of the proximal third diaphysis of the femur to the distal diaphysis (**Figure 1 - white arrow**). The possibility of the presence of a soft tissue foreign body was speculated. In comparison, similar imaging features have been reported in cases of rare foreign body migration or localized inflammatory responses, where soft tissue masses were identified using advanced imaging techniques such as MRI. For instance, in the case of olfactory neuroendocrine carcinoma in a dog, MRI findings highlighted the value of post-contrast enhancement in delineating abnormal tissues and detecting irregular structures that might otherwise go unnoticed (Molazem, Amini, Salimi, Muhammadnejad, & Hasannejad, 2024; Molazem *et al.*, 2022; Ramezani *et al.*, 2023; Zehtabvar *et al.*, 2023). Given the extension of the fistula to the pelvis and the long distance to the end part of the fistula, surgery did not seem feasible. As expected, inguinal lymph nodes were enlarged. Antibiotic treatment was continued.

Figure 1. CT scan of the path of the fistula

By day 40, during the process of wound irrigation, a bump appeared in the wound area and a foreign body resembling grass was discovered. After the foreign body was slowly removed from the location by forceps, it was found to be a 30 cm foxtail that the growth of the plant had caused a fistula in its path (**Figure 2**).

Within five days following the removal of the foxtail, marked improvement was noticed. The purulent discharge decreased and the dog's attitude and appetite improved considerably.

Figure 2. Image of the foxtail removed from the left femur's medial aspect

4. Assessments

Vegetal foreign bodies can penetrate through intact skin or natural orifices and migrate through the body. Foxtail is one of the most common causes of foreign body-related disease in dogs (Philp *et al.*, 2022). Foreign body-related diseases are less common in cats and this is because of their living conditions and more exposure to the outdoor environment. This can also be due to their grooming behavior and lifestyle. In cats, these grass awns are mostly reported in Domestic Shorthairs, in the ocular conjunctiva (62.2%), and Third eyelid (18.9%) (Griffeuille *et al.*, 2023;

Philp *et al.*, 2022). Although foxtails are less commonly reported in cats than dogs, one case of foxtails migrating and growing to an unusual location of the cat's body has been reported (Doyle *et al.*, 2011).

Philip *et al.* (2021) conducted a study on 745 dogs. They reported that these grass awns are mostly found in the aural canal (28.6%), Subcutaneous tissues (24.1%), Nasal canal (18%), and ocular conjunctival membranes (6.8%) (Philp *et al.*, 2022). In such lesions, the symptoms of foxtail foreign body become noticeable in a shorter period, hence, these cases were immediately referred to the veterinary centers and the detection of foxtail is faster. In these cases, due to the quick detection of the foreign body and quick removal from the wound site, the treatment is started sooner and as a result, the plant does not have a chance to grow in the body. Usually, these lesions can be treated on an outpatient basis (Philp *et al.*, 2022).

However, in a smaller number of cases, according to the unusual locations of penetration, often not associated with severe symptoms, a quick diagnosis is hardly achieved. Detection and treatment require diagnostic imaging or exploratory surgery which is usually accomplished after a longer period, when foxtail penetration has been associated with fistula and secondary infection (Philp *et al.*, 2022). Also, it is not always possible to remove the foxtail even with surgery

(Schultz & Zwingenberger, 2008). Late diagnosis can lead to a complicated medical situation, allowing foxtail to migrate and grow within the body, potentially reaching vital internal organs where the presence of a foreign body is unusual (Dennis *et al.*, 2005) as it was reported to cause ventricular meningoencephalitis and encephalitis in dogs by migrating to the intracranial region (Dennis *et al.*, 2005), acute pancreatitis by being breathed in and migrated to the right pancreatic lobe through the lung (Citi, Mannucci, Vannozzi, & Vignoli, 2017; ZAIDI, Bessas, Hezil, Benseghir, & Bitam, 2024), and infectious inflammation of the lung by penetrating the pleural cavity (Elizondo-Quiroga *et al.*, 2024; Schultz & Zwingenberger, 2008). It should be noted that foreign bodies like grass awns in the mediastinal cavity can appear with signs similar to many other diseases and it should be distinguished from pleural effusion or pleural thickening by radiographs or CT scans (Schultz & Zwingenberger, 2008). In several cases, this condition is not diagnosed until death.

The penetration of a foreign body contaminated by bacteria may cause a purulent fistula (Schultz & Zwingenberger, 2008). In the case reviewed in this article, hyporexia, fever, lameness, and an open wound with Purulent discharge in the medial aspect of the left femur were observed. penetration of grass awn into the skin or natural orifices and its migration to different parts of the body have different types of clinical signs and lesions (Griffeuille *et al.*, 2023; Marchesi *et al.*,

2020). In Marchesi *et al.* report (2020), after a 13-year-old male dog was examined for hematuria and pyrexia, ultrasonography of the genitourinary tract pictured a migrating grass awn in the right prostatic lobe. with laparotomy, the grass awn was removed entirely from the prostatic parenchyma. Four months after the surgery, the dog's symptoms improved (Karami, Veshkini, Asghari, Rafiee, & Mortazavi, 2023; Marchesi *et al*., 2020).

Based on this and other similar cases, it is apparent that the existence of incurable lesions with persistent purulent discharge indicates that the foreign object is still present in those lesions. If a simple examination does not see the foreign body, the inside of the wound should be examined more deeply. Also, if the treatment of the lesions is not successful within 10 to 20 days, it should be checked for the migration, growth, and size of the foreign body with diagnostic imaging and an exploratory laparoscopy. In the case studied in this article, the path of the fistula was determined by a CT scan. However, the growth length and location of the foreign body prohibited the decision to surgically remove it.

Numerous reports have been of plant-like foreign objects migrating within the dog's body. To the best of our knowledge, there have been no reports of 30 cm growth of foxtail in different parts of

the dog's body. In this case, the abnormal excessive growth of foxtail in the dog's body was noteworthy.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest to the research, authorship, and/or publication of this article.

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گزارش یک مورد از رشد غیرمعمول جسم خارجی جو موشی در یک سگ دالمیشن

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چکیده

یک سگ دالمیشن ماده 6 ساله عقیم شده با سابقه 2 روز ترشحات چرکی در قسمت داخلی استخوان ران چپ مراجعه کرد. زخم شستشو داده شد و درمان آنتی بیوتیکی به مدت 30 روز با پاسخ نسبی ادامه یافت. به دلیل امتداد فیستول به داخل لگن و فاصله زیاد تا قسمت انتهایی فیستول، عمل جراحی امکان پذیر به نظر نمی رسید. در روز 40 یک برآمدگی در محل زخم ظاهر شد. بعد از اینکه جسم خارجی از این برآمدگی خارج شد، مشخص شد که گیاه جو موشی به طول 30 سانتی متر در مسیر فیستول پیشروی کرده است. 5 روز پس از خارج کردن جسم خارجی، بهبودی قابل توجهی همراه با کاهش ترشحات چرکی رویت شد و موجب رفع مشکلات ناشی از خلق و خوی حیوان گردید. تاکنون مطالعات زیادی در رابطه با مهاجرت اجسام خارجی گیاه مانند در بدن سگ ها انجام شده است. در این مطالعه، رشد بیش از حد گیاه جو موشی در داخل بدن حائز اهمیت بود.

کلید واژه ها: سگ، فیستول، جسم خارجی، گیاه جو موشی، تیغ گیاهی