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Case Report

Intra-abdominal necrotic lipoma in a terrier dog

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ABSTRACT

A ten-year-old female unspayed terrier, weighing 13 kg, presented for chronic abdominal distention, urinary incontinence, and pollakiuria suspected of urinary bladder infection. Physical examination revealed abdominal pressure with pain in palpation. Other clinical signs of the vital organs were in the normal range. Hematology and biochemistry and urinalysis were done. Hematological examination, due to neutrophilia, showed increased white blood cell count (27.6 × 10^9/L). Other hematological parameters were in the normal range. Biochemical parameters including, albumin, total protein, creatinine, globulin, alanine transaminase (ALT) and aspartate aminotransferase (AST), and uric acid were in normal range except alkaline phosphatase (ALP) (160 IU/L) was higher than the normal range. Radiography and ultrasonography revealed an abdominal mass, measuring (100 mm × 74 mm × 56 mm) near the descending colon. Ventrodorsally (VD) abdominal radiography demonstrated an oval soft tissue mass with areas of mineralization, caudal of the abdomen which displaced descending colon left laterally and was adjacent to the left kidney. Exploratory laparotomy was performed to remove the fatty mass. Histopathological examination revealed a necrotic and moderately calcified cystic lipoma.

لیپومای نکروتیک داخل شکمی در یک قلاده سگ تریر

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چکیده

یک قلاده سگ تریر ماده عقیم نشده ده ساله به وزن ۱۳ کیلوگرم، بعلت اتساع مزمن شکم، عدم کنترل ادرار و تکرر ادرار مشکوک به عفونت مثانه مراجعه نمود. معاینه فیزیکی یک فشار شکمی همراه با درد در ملامسه را نشان داد. سایر نشانه های بالینی در رابطه با اندام های حیاتی در محدوده طبیعی بودند. آزمایشات هماتولوزی، بیوشیمیایی و آنالیز ادرار برای آن انجام شد. بررسی هماتولوژی، افزایش در گلبول های سفید خون (۲۷/۶ × $L/۱۰^۹$) به علت نوتروفیلی را نشان داد. سایر پارامترهای هماتولوژی در محدوده طبیعی بودند. پارامترهای بیوشیمیایی ازجمله آلبومین، پروتئین تام، کراتینین، گلوبین، آلانین ترانسفراز(ALT) ، و آسپارتات آمینوترانسفراز (AST)، و اسید اوریک در محدوده نرمال بودند بجز آلکالین فسفاتاز (ALP) (۱۶۰ IU/L) که از محدوده طبیعی بالاتر بود. رادیوگرافی و سونوگرافی، یک توده شکمی به اندازه (۵۶*۷۴*۱۰۰ میلیمتر) نزدیک کولون نزولی را آشکار نمود. رادیولوژی شکمی – پشتی شکم، یک توده بافت نرم بیضی شکل با نواحی معدنی شده در خلف شکم نشان داد که کولن نزولی را به یک طرف جابجا کرده و در مجاورت با کلیه چپ بود. لاپاراتومی اکتشافی برای خارج سازی توده چربی انجام گردید. هیستوپاتولوژی یک لیپومای نکروتیک کلسیفیه تا حدودی کیستیک را نشان داد.

واژه های کلیدی: سگ، تریر، لیپومای داخل شکمی، نکروز چربی، هیستوپاتولوژی

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INTRODUCTION

Lipomas are common, benign, mesenchymal origin tumors of dogs, composed of well-differentiated adipocytes [1]. Ninety-eight percent of lipomas occur at subcutaneous locations [2]. However, they have been developed in other sites such as intra-thoracic, intra-abdominal, intra-pelvic, and Inter-muscular sites [3]. Lipomas affect approximately 16% of dogs [4]. They are frequently prevalent in elder dogs and are often clinically asymptomatic [5]. Old and obese dogs are more susceptible to developing lipomas, particularly females, because they physiologically have a predisposition to store greater amounts of adipose tissue. [4, 6] Within the body, lipomas can remain undetected for an extended period and may become very big before the clinical symptoms appear. The clinical features of these tumors relate to organs they have compressed or entrapped [3]. Canine intra-abdominal lipomas are benign tumors with very low occurrence, initiating principally from deposited adipose tissues [7]. Intra-abdominal lipomas may originate from the peritoneum, retroperitoneum, omentum, urachal remnants, or subserous fat of the colon and urinary bladder [8], although their origin may not be recognized [3]. Clinical symptoms of intra-abdominal lipoma are related to proximate organ compression and dislocation, including abdominal distension, repeated vomiting, fecal tenesmus, inguinal swelling, urinary incontinence, pollakiuria, or dysuria [9]. Surgical resection of tumors results in the stop of clinical symptoms and the post-operative survival period is more than five years [7].

CASE PRESENTATION

A ten-year-old female unspayed terrier, with 13 kg weight, was referred to the Apadana Veterinary Clinic at Isfahan, Iran, with chronic abdominal distention, urinary incontinence, and pollakiuria suspected of urinary bladder infection. Physical examination revealed abdominal pressure with pain in palpation. Other clinical signs of the vital organs were in the normal range. Hematology and biochemistry and urinalysis were done. Hematological examination, due to neutrophilia, showed increased white blood cell count (27.6×10^9/L, reference range $5.50\text{-}16.90 \times 10^9$/L). Other hematological parameters were in the normal range. Biochemical parameters including albumin, total protein, creatinine, globulin, alanine transaminase (ALT) and aspartate aminotransferase (AST), and uric acid were in the normal range except alkaline phosphatase (ALP) (160 IU/L, reference 12-121 IU/L) was prominently higher than the normal range. Radiography revealed the presence of an oval mineralized mass placed in the caudal area of the abdomen (Figure 1). Moreover, the mass was hypoechoic in ultrasonographic evaluation with a homogenous well-defined structure (Figure 2). On the other hand, the size of the mass was recorded as 100 mm × 74 mm × 56 mm based on laparotomy observations (Figure 3). In the cut surface, yellow-brown colored tissue with central area necrosis was detected (Figure 4). For histopathological examination, several tissue samples of the mass were fixed in 10% buffered formalin. The paraffin-embedded blocks were made and tissue sections were cut at 5 μm and stained with the hematoxylin and eosin (H&E) method. Histopathologic examination revealed a necrotic and moderately calcified cystic lipoma (Figures 5 and 6). Postoperative recovery lasted 4 weeks and the dog was completely recovered.

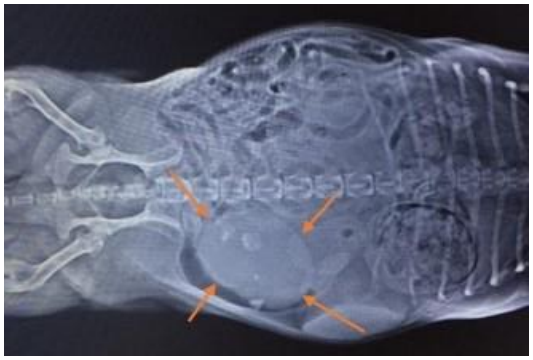

Figure 1. Ventrodorsal (VD) abdominal radiography: an oval soft tissue mass (arrow) with areas of mineralization, caudal of the abdomen displaced descending colon left laterally adjacent to the left kidney

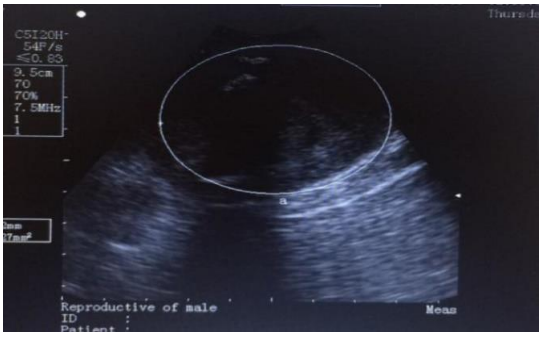

Figure 2. Ultrasonography revealed a hypoechoic oval-shaped, well-defined mass with homogenous echotexture and anechoic structure in the center, caudal of the abdomen adjacent to the descending colon

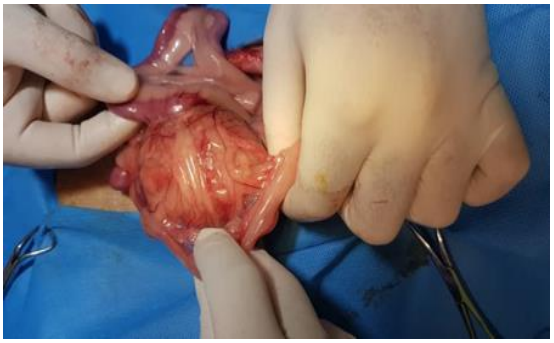

Figure 3. Exploratory laparotomy was performed and the mass (100 mm × 74 mm × 56 mm) in the mid ventral near the descending colon adhered to the peritoneum was observed. The attachments of the mass were unrestricted and the mass was removed.

Figure 4. The expelled mass was confined with a thick fibrous tissue and the consistency of the mass was soft. In the cross-section, its color was vellow to brown with central necrosis

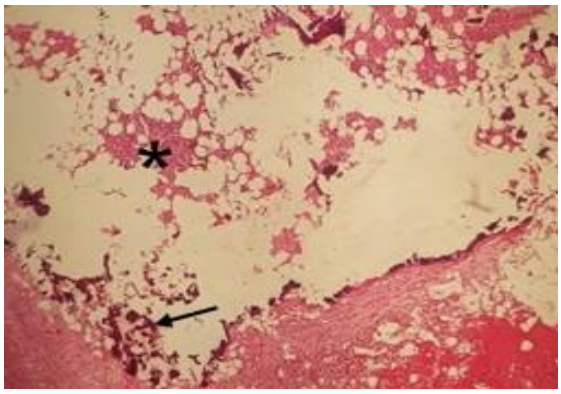

Figure 5. Histopathologic photomicrograph a necrotic and moderately calcified cystic lipoma. The content of cysts included partially necrotic fats and fibrin exudates (asterisk), surrounded by a thick fibrous capsule. Also, there was infiltration of inflammatory cells, especially lymphocytes, plasma cells, and neutrophils (arrow). H&E, ×40.

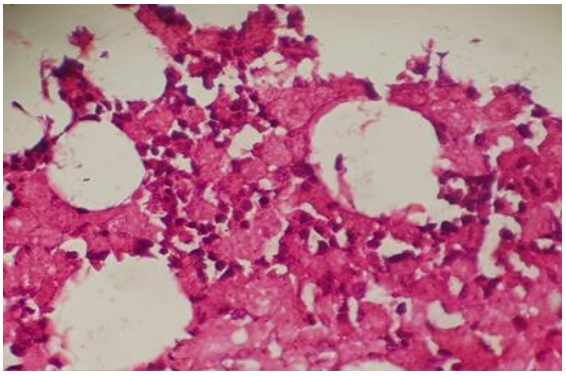

Figure 6. Higher magnification for necrotic lipoma. In the mass necrosis and infiltration of inflammatory cells were observed prominently. H&E, ×400.

DISCUSSION

Lipomas are prevalent, benign mesenchymal neoplasms made of well-differentiated adipocytes and are often asymptomatic [5, 6, 10]. Three types of adipose tissue neoplasms including, simple lipomas, infiltrative lipomas, and liposarcomas are explained in veterinary textbooks [7]. Lipomas can be differentiated from liposarcomas with morphological and histological characteristics. Histologically, lipomas, similar to normal fat, have indistinct nuclei and cytoplasm, whereas liposarcomas are characterized by distinct nuclei, abundant cytoplasm with several droplets of fat, and increased cellularity. Infiltrative lipomas cannot be differentiated from the more prevalent simple lipoma by observing cytology or small biopsy samples [11]. Within the cavities of the body, lipomas can stay hidden for a long period and may become relatively big before they cause clinical symptoms. Usually, the clinical symptoms of such neoplasms are related to the organs that they compress or encompass [3, 7]. A large group of abdominal masses are not associated with any organ. In this group, there is a heterogeneous and included wide range of conditions, changing from malignant tumors to inflammatory conditions without a specific occurrence; thus, the possibility of a lesion being benign rather than malignant seemed less predictable. Mesenchymal tumors seemed to be common and included not-specified sarcomas, gastrointestinal stromal tumors, and lipomas [12]. Generally, a genetic transmissible element to developing lipomas has already been proposed [6,13]. Risk factors for lipoma occurrence in people are reported to be alike to the findings of dogs, although, in humans, the frequency of lipomas is increased in patients with obesity, hyperlipidemia, and diabetes mellitus [14]. A genetic component is suspected for lipoma occurrence in people [15]. A genetic relationship has not been demonstrated in dogs but the breed predisposition indicates that a genetic factor to the risk of occurring lipomas probably exists in dogs

[6]. There was strong evidence of breed predilections that there were 8 breeds that displayed predisposition in comparison with crossbreds: Dobermann Pinscher, Beagle, Springer Spaniel, Weimaraner, Miniature Schnauzer, Labrador Retriever, Cocker Spaniel and German Pointer [16]. Obesity is a risk factor for developing lipomas [14]. Dogs with weight at or above the average for their breed and sex had 1.97 times the chance of diagnosis with lipoma. This supports the hypothesis of lipoma association with obesity/overweight and this factor is a modifiable risk factor [6]. Some neoplasms such as osteosarcomas have a strong relationship with increasing body weight [13]. Generally, Increasing age has previously been known as a risk factor for neoplasm development. Therefore, the same may be accord for the risk of lipoma occurence[13, 17]. In one study the average age of lipoma cases was 10.02 years in comparison with the average age of 4.18 years for non-lipoma dogs. The cases of lipoma also increased obviously as dogs aged, with dogs aged 9–12 years having 17.52 chances compared with dogs aged less than 3 years old [6]. Therefore, there is strong evidence that show lipoma should be included as one of the accepted prevalent diseases of aged dogs [18]. The influences of sex hormones on tumor occurrence are complicated; sterility condition has been reported with differing impacts on different tumor kinds and to influence the risk of occurring both genital and non-genital neoplasms [19]. One study demonstrated a reduced risk of lipoma in intact females and intact males compared with spayed females and castrated males, even after taking age into account. This could show some protective effects of female and male sex hormones. However, post-neutering changes in fat dissemination and decreased energy requests have been suggested and the effects of sterility on the risk of lipoma may be intermediated by obesity as a confounder rather than directly [20]. Because intra-abdominal lipomas are asymptomatic unless the adjacent organs are affected; the results of this study can help veterinary clinicians to be aware of similar conditions which could occur in aged dogs. Fortunately, by developing diagnostic procedures and surgical management, the diagnosis of lipomas especially intra-abdominal lipomas without conspicuous clinical signs probably will increase and on-time intervention can rescue the life of the affected dogs.

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ETHICS

Approved.

CONFLICT OF INTEREST

None declared.

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