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CLINICAL REPORT

Surgical Treatment of Sialocele Associated with Osseous Metaplasia and Sialolith in a Terrier Dog

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Abstract

Case description- The present case described sialocele associated with sialoliths and ectopic ossification in a 3-year-old female Terrier dog.

Clinical findings- In the general examination, an enlargement fluctuate mass was seen blow the jaw around the neck. Clinical parameters (TPR) and blood test results were normal. The radiograph was showed the fluid opacity mass with some radiopaque particles within it. The fine needle aspiration and then the cytologic investigation proved that the mass was filled with saliva.

Treatment and outcome- The surgical technique was the best treatment for removing the affected mandibular and sublingual salivary glands. In histopathologic study, no salivary acini or ducts were observed. The mass wall lined with epithelium tissue in some area. The well differentiated trabecular bones were present in the inner surface of cyst. Some sialoliths in 2-4 mm dimeter were identified in the mass.

Clinical relevance- Salivary sialocele is a collected saliva in a cavity formed of connective tissue. The most affected animal is dog in any age especially in male, and rare in other species.

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1. Case Description

A 3-year-old female Terrier dog with a large, soft and fluctuant mass was referred to the Veterinary Hospital, Shahid Bahonar University of Kerman. The mass was extended from the base of one side ear until the opposite ear on the whole neck (Figure 1).

Figure 1. A large mucocele under the jaw (asterisk) in a 3-year-old dog.

2. Clinical Findings

The clinical examination such as temperature, pulse and respiratory rate (TPR) were normal. The blood test parameters including hematocrit, RBC and WBC count were in the normal range. There was no history of previous diseases or trauma. The fine needle aspirated fluid was detected as saliva through laboratory examination. X-ray examination in lateral position (KV:64 , MA:1.5) showed the fluid opacity mass (Figure 2).

3. Treatment and Outcome

The dog was anesthetized with ketamine 10% (10 mg/kg, IM) and xylazine 2% (1 mg/kg, IM) as induction, and the isoflurane (MAC=1.2 %) for maintenance anesthesia, and positioned in the dorsal recumbency. After aseptically preparation of the operation site, the mass was tried to empty before the surgery to find out affected salivary gland. The nearly 300 ml fluid was discharged with a 50 ml syringe. For identified the affected side the gravitated of mucocele content was used. The dog positioned at the left lateral recumbency and used a pad for rotated the neck dorsally, the mandibulary sublingual gland (MSG) area was prepared for surgery. Incision was made from caudal of the mandibular angle until external jugular vein. The capsule of MSG was dissected gently with avoided damaging to the maxillary and linguofacial vein, and second cervical nerve branch in adjacent to the gland. Dissection was continued to the sublingual gland with making the tunnel under the digastricus muscle. The common duct of the both gland was ligated. A part of the MSG and the whole sublingual gland were removed without opening the lumen of the glands. The dissection was turned toward the cervical for removing the remainder part of the MSG. After that, the first incision was sutured. The dog was positioned in the dorsal recumbency, and the second incision was done in ventral midline of the neck. A large number of sialoliths in 2-4 mm diameter were observed inside the lumen of the sialocele (Figure 3), with some hard consistency tissues. Ceftriaxone 1 gr (20 mg/kg), tramadol 50 mg (1 mg/kg) and dexamethasone 0.5 mg (0.2 mg/kg) were used for 5 days post operation.

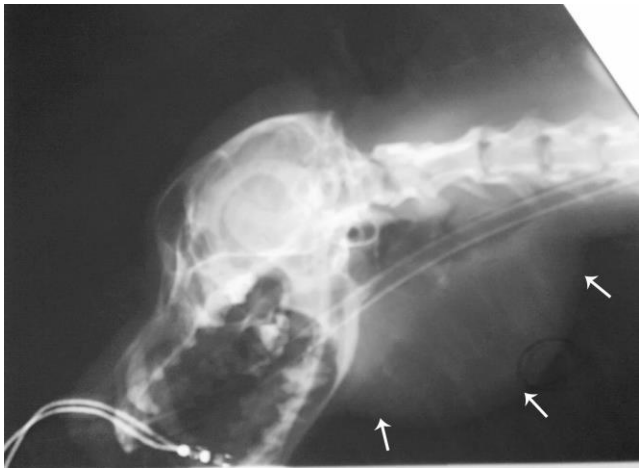

Figure 2. X-ray figure shows the mucocele lesion as radiolucent mass under the neck.

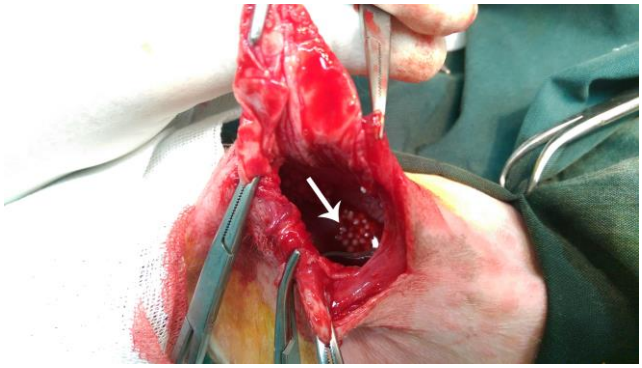

Figure 3. Gross appearance of sialoliths inside the mucocele.

Entire of the mandibular and sublingual glands were fixed in neutral buffered formalin 10% and paraffin embedded blocks were provided. The sections in 5 µm thickness were stained with hematoxylin-eosin and studied with light microscopy. Histopatholoically, no acini or ducts of salivary glands were observed in the examined sections. The well differentiated ossifications as different trabecular bone was present in the inner surface of cystic wall that some of them showed calcification. Osseous trabeculae had

osteocytes in the lacunae surrounded by bone matrix, and osteoblasts placed on the trabecular surface (Figure 4). The mass had a wall that was lined with a simple squamous epithelium in some parts. The underling tissues were composed of highly vascularized loose connective tissue (Figure 5). Also, sialoliths with osseous-like structures were dispersed in the gland (Figure 6). No evidence of neoplasia or inflammation was identified in the tissue sections. Our findings were in consistent with osseous metaplasia.

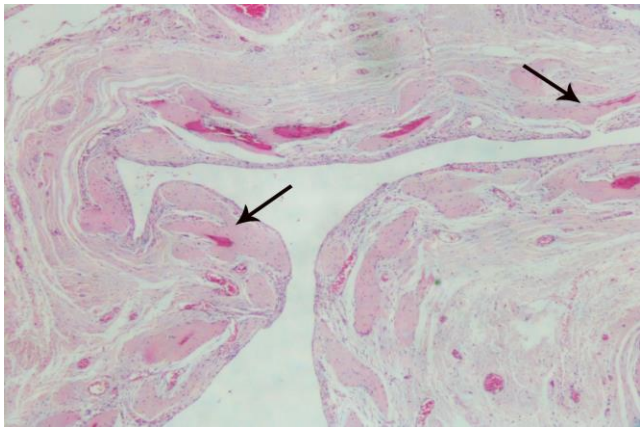

Figure 4. Trabecular bones (arrows) in the mucocele wall (HE, × 40).

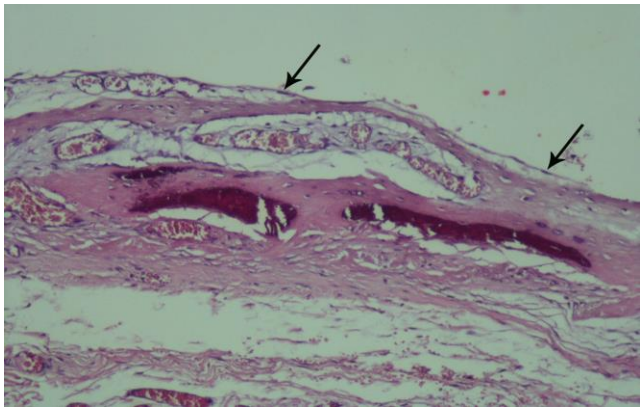

Figure 5. Mucocele wall is lined with simple squamous epithelium and underling fibrous connective tissue with congested (HE, × 400).

4. Clinical Relevance

The salivary mucocele (sialocele) is the leakaged saliva from salivary gland or salivary ducts that surrounded with granulation tissue. Based on saliva accumulation in various tissue, the mucocele is classified to sublingual, pharyngeal, zygomatic, cervical and complex mucocele.[1,2] In the cervical mucocele the saliva collects in the cranial cervical or intermandibular regions. The mucocele lines by epithelium or granulation tissue and had a capsulate. Granulation tissue is produced in response to inflammation due to leakage saliva.[3,4] Trauma, foreign body and sialoliths are the most reasons for occurrence of mucocele.[1,5] The most affected animal is dog in any age especially in male, and rare in other species.[6,7] Common site of the mucocele in the dog is in cervical or intermandibular area. Sialoceles are asymptomatic and mostly referred for treatment of fluctuant mass. Aspiration of these masses shows mucoid with clear yellowish color fluid.[4,8] The best way for treatment is operation the salivary gland and its ducts.[1,9]

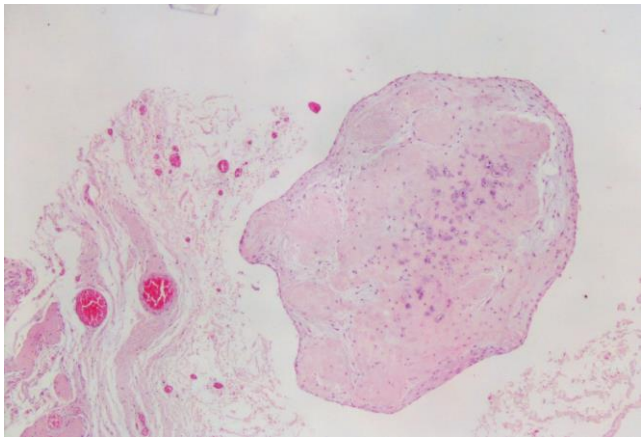

Figure 6. Osseous-like structure of sialolith within the mucocele (HE, × 40).

Occurrence of salivary gland diseases are rare in small animals. The most common disease is mucocele[10,11,12] with 5% prevalence.[12] The male dogs specially French Poodles, German shepherd, Dachshunds, and Australian Silky Terriers, are prove to be affected more than female dogs and cats.[1,6,7] Mucocele by itself is asymptomatic and painless but may be associated with inflammatory response, oral bleeding, respiratory distress, dysphagia, swelling and enophthalmos.[1,13] This disorder must be differentiated from salivary gland tumors, hematoma, lymph node enlargement, cyst, sialoadenosis, and sialoadenitis.[1,6,14] The cervical mucocele diagnosis is based on history, clinical investigation and histopathologic study. Radiography can help to recognize the radiopaque sialoliths, and sialography for determination the origin site.[1,15] Management methods for mucocele perform in two ways including drainage and used some anti-inflammation agents or surgically removed completely, but the drainage alone cannot treat this condition.[4,10,12]

There are three types of calcifications: osseous choristoma, hetreotopic ossification, and osseous metaplasia. The normal bone cell in atypical site in microscopical view is osseous choristoma. The heterotopic ossification is metastatic ossification, secondary occurrence in systemic

or local disease. The osseous metaplasia develops directly from another concoctive tissues such as fibroblast to the osteoblast.[9,11]

The present case described sialocele as well as osseous metaplasia in a female Terrier dog. The soft and fluctuate mass was completely isolated from around tissue. The mass size was 20×10×10 cm without any rupture history. In the clinical examination, it was separated from the underlying tissue. Radiograph showed the big mass with fluid opacity below the jaw with some radiopaque particles. The salivary sialolith was missed in radiograph that retaliated to their radiolucent structure. The mandibular salivary gland were removed in concurrent with sublingual gland because their ducts are associated together and removing one may also traumatize the other one duct.[1] The dog was returned normal life after surgery without any post operation complications. In histopathology examination several trabecular bones without evidence of inflammation and malignancy was observed.

Prassions et al. reported occurrence of osseous metaplasia and sialocele in a 2-year-old male dog. Sialocele appeared as a soft and painless mass located upper the neck. In pathological study, the epithelial wall of mass was lined with granulation tissue. There were some calcified calculi and metaplastic ossification within the mass.[16] Their histopathology findings were similar to our results but we observed in female dog.

Fernandes et al. described salivary mucocele with ectopic ossification in a non-spayed female Shih-Tzu. The mucocele size was the half of our report. The excited mass was cystic has a wall in gross. They observed granulation tissue, sialoliths, and osteoblast cells in the cyst wall histopathologycally.[6] The pathologic and microscopic results were in consistent with our results.

In other report in a 4-year-old, male dachshund, the clinical observations and location of the mass was similar to our case. There were seen no salivary acini and the mass was completely separated from its around tissue with granulation tissue without epithelial linings. The osteoid formation foci were seen in the inner surface of the cyst wall.[9]

The osseous metaplasia in eye was reported in a 10-year-old, male Great Dane. Based on the histopathology examination, well differentiated osteoid lamellar iris was present, with no signs of neoplasia. This type of ectopic ossification is the best sample of osseous metaplasia originated from iris connective tissue.[17]

The first salivary mucocele in wild cat was published by Rahal et al. in Brazil. The cervical mucocele was presented for two years. Conservative treatment was failed for five times and finally the MSG was excited by surgery.[4] The clinical observations such as soft and fluctuant mass under the jaw that extended whole the neck were similar the present case.

Spangler et al. showed the incidence of this disease in dog was twice that of cat.[7] In our case and the report of Fernandes et al. the young age female dogs were affected.[6]

In the present case, 3-year-old female, observed the very large mass in cranial cervical due to idiopathic reason. It should be noted that along with all the reasons mentioned in the previous articles, the idiopathic cause is one of the main etiology for this disorder. This case report highlights a very uncommon salivary gland disorders along with low frequently osseous metaplasia in dog. There are several case reports in dog but none of them were not in Terrier breed and the most of them were described in male dogs. There is a need for a more comprehensive researchs on etiology, pathogenesis and effect of species and sex.

Conflict of interests

None.

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چکیده

درمان جراحی سیالوسیل مرتبط با متاپلازی استخوانی و سیالولیت در یک سگ تریر

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توصیف بیماری- گزارش حاضر در ارتباط با یک قلاده سگ ۳ ساله نژاد تریر ماده با یک توده بزاقی همراه وجود سنگ‌های بزاقی و استخوان‌سازی نابجا است.

علایم بالینی- در معاینه بالینی یک توده حاوی مایع در ناحیه تحتانی گردن مشاهده شد. علایم بالینی (TPR) و آزمایش خون حیوان نرمال بود. در گراف رادیولوژی اپسیته مایع به همراه تکه‌های استخوان در ناحیه دیده شد. بر اساس نتایج آزمایشگاهی مایع استخراج‌شده، توده حاوی بزاق بود.

درمان و نتیجه- بهترین راه درمان خارج کردن کامل غدد فکی و زیرزبانی تشخیص داده شد. در مطالعه هیستوپاتولوژی آسینی و کانال بزاقی دیده نشد. توده توسط یک بافت اپتلیومی در برخی نقاط احاطه شده بود. تکه‌ها استخوانی با تمایز ترابکولاری کامل در سطح داخلی کیست وجود داشت. سنگ‌های بزاقی به‌اندازه ۴-۲ میلی‌متر در داخل مایع کیست قرار داشتند.

کاربرد بالینی- سیالوسیل به تجمع بزاق در داخل بافت همبند گفته می‌شود. بیشترین گونه حیوانی درگیر کننده این عارضه، سگ‌های نر بوده و به میزان کمتری در سایر گونه‌ها دیده می‌شود.

واژه‌های کلیدی- سیالوسیل، موکوسیل، متاپلازی استخوانی، سگ