



Antibioma in Canine: A Rare Case

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Abstract:

Maxillofacial infection is not rare. But, it's potential of spreading to important and vital anatomical structures, such as the respiratory system and mediastinum, increasing the risk of septicemia and could lead to death for the affected patients. The canine space or infraorbital space is a thin potential space on the face that can be infected. The aim of this paper is to emphasize different and rare etiological factors that can play a role in odontogenic abscesses, which can lead to complications.

A 65 year old woman complained of pain and hard swelling in the right side of the face, after extraction of upper canine. Swelling did not reduce even after antibiotics. Provisional diagnosis was antibioma. CT scan examination revealed nasal mucositis. We prescribed the COX-2 inhibitors along with subcutaneous placentrex injection. After 10 days, the pain and swelling had subsided completely. The patient is under regular follow up without any further complications.

Keywords: *Antibioma, Odontogenic, Canine Space, Placentrex, COX-2 Inhibitors*

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1. Introduction

Odontogenic infections are a major reason for consultation in dental practice. They affect people of all ages, and most of them respond well to current medical and surgical treatments.¹ Maxillofacial infection can produce serious systemic complications and even a fatal result.² The canine space or infraorbital space is a slender facial space. Its boundaries are nasal cartilages anteriorly, buccal space posteriorly, levator labii superioris muscle superiorly, oral mucosa of

the maxillary labial sulcus inferiorly, quadratus labii superioris muscle superficially, and the deep border is created by the levator anguli oris muscle. The canine space communicates with the buccal space posteriorly. Angular artery, angular vein and infra-orbital nerve are its major content. Main pathology related to canine space are in relation to Maxillary canine and Maxillary first premolar.³

There are cases of fatal outcomes due to airway obstruction can progress rapidly if not adequately treated. Maxillofacial



infection are characterized as polymicrobial, endogenous, opportunistic, dynamical and mixed (aerobic and anaerobic bacteria) The literature shows that it affects mainly male patients either in adult or child populations with multiple possible triggering factors.²

2. The Case

In this case report, we present a rare case of antibioma in the canine space infection complicated with nasal mucositis. A 65 year old female patient reported to Darshan Dental & Oral cancer center with complaints of hard swelling and pain in right facial region near the nose. Extraction of upper right canine was done 15 days ago and she was under antibiotics from the first day after extraction.

Clinical examination revealed a diffuse swelling lateral to the nose in the canine fossa region. It was firm in consistency and tender on palpation. Intraoral exam revealed edentulous maxillary alveolus with obliteration of labial vestibule (Figure 1). The canine extraction site showed adequate healing. There was tenderness on palpation of the vestibule and there was no discontinuity in the maxilla ruling out fracture (Figure 2).

Provisional diagnosis was Antibioma. The antibiotics were stopped. She was given a combination of Trypsin, Chymotrypsin, Bromelain, Rutoside and Diclofenac potassium. After 5 days, pain had reduced but the swelling was persistent. In CT-scan, a nasal growth was evident on the mesial side that exerted pressure on the nasal bone (Figure 3,4). Subcutaneous injection of Placentrex was given around the swelling. The swelling came down within a week without any other complications (Figure 5). The patient is under regular follow up.

3. Discussion

Gwande M.J et al discussed the bilateral canine space infection, They

performed was FNAC (Fine needle aspiration cytology) from canine region followed by intraoral drainage incision at the most prominent part of swelling (Modified Hiltons method), 5 ml of pus was removed, postoperative dressing was applied and regular follow-up was done with continued antibiotic therapy.¹ Our patient had a firm swelling in the canine space and aspiration was not performed.

Veronez B, Matos F.P et al analyzed medical records of 157 patients who had maxillofacial infections between August 2002 and May 2010. They found that 113 patients had odontogenic infections and 44 had non-odontogenic infections. They concluded that maxillofacial infections should be treated as soon as possible. Even without culture and antibiogram results, it was possible to treat the infection and to reestablish function.² Our patient had odontogenic infection due to caries of the maxillary canine that persisted even after the extraction. We also found the inflammatory changes in deeper tissue.

Peterson et al (2002) point out two major causes for the odontogenic infection, the periapical (due to pulp necrosis and subsequent bacterial invasion) and the periodontal (as a result of periodontal disease) that allows inoculation of bacteria into deep tissues.² Shetty L, Setiya S et al also discussed a case of canine space infection. The extracted tooth had a wooden stick at the apex which was a very rare and shocking finding.⁴ This report showed that incisors can also produce canine space infection.

Weise H, Naros A et al conducted a retrospective study and found that 16 patients showed odontogenic infections that spread over multiple maxillo-facial and cervical regions accompanied by septic laboratory signs. All these patients needed



intensive care and a tracheostomy. The hospitalization period was 27.8 days on average. In 16 cases, risk factors for the development of odontogenic abscesses like diabetes mellitus, obesity, chronic alcohol and nicotine abuse, rheumatism and poor oral hygiene were present. Intra-operative swabs showed a typical polymicrobial aerobic and anaerobic spectrum of oral bacteria, especially anaerobes and streptococci, mainly *Streptococcus viridans*. They concluded that Odontogenic infections with fulminant progression should be treated based on clinical and imaging data with immediate surgical incision and drainage including elimination of odontogenic foci as well as intensified intra- and postoperative irrigation. If needed, repeat imaging followed by further incisions should be performed. Immediate antibiotic treatment adapted to the antibiogram is of utmost importance. A combination of tazobactam and piperacillin was their first choice and could be recommended for abscesses that spread over multiple levels with initial signs of severe infections.⁵

Zarghi A, Arfaei S et al discussed that COX-2 is not detected in most normal tissues, but its expression is rapidly induced by stimuli such as pro-inflammatory cytokines (IL-1b, TNF α), lipopolysaccharides, mitogens and oncogenes (phorbol esters), growth factors (fibroblast growth factor, FGF; platelet-derived growth factor, PDGF; epidermal growth factor, EGF), hormones (luteinizing hormone, LH) and disorders of water-electrolyte hemostasis, resulting in increased synthesis of PGs in inflamed and neoplastic tissues. Thus, the inducible isozyme has been implicated in pathological processes such as inflammation and various cancer types. COX-2 may be involved in the “adaptative cytoprotection” response in GI

mucosa. When the latter is inflamed or ulcerated, COX-2 is rapidly induced at sites of injury where it produces large amounts of PGs involved in the healing process. So, selective COX-2 inhibitors should be avoided in patients with gastric susceptibility. In addition, selective inhibitors of COX-2 depress prostacyclin (PGI₂), an athero-protective agent, but not COX-1 derived thromboxane A₂ (TXA₂), a pro-aggregatory and vasoconstrictor mediator, which might predispose patients to heart attack and stroke. Thus, the use of these compounds in cardiovascular diseases still requires vigilance. Rofecoxib (Vioxx) was withdrawn voluntarily by Merck from the market in September 2004 following the increased cardiovascular risks observed in Adenomatous Polyp Prevention on Vioxx (APPROVe) study. Subsequently, the sale of Bextra (valdecoxib) was also suspended by Pfizer in 2005. This raised a question on the safety of selective COX-2 inhibitors. However, no increased risk of cardiovascular thrombotic events was evident in Celecoxib Long Term Arthritis Safety Study (CLASS) trial conducted on celecoxib, which is the only selective COX-2 inhibitor available in U.S. market⁶. Hence, before administration of COX-2 inhibitor, we must know about its indications, contraindications, and mode of action.

It is well admitted that the link between chronic inflammation and cancer involves cytokines and mediators of inflammatory pathways, which act during the different steps of tumorigenesis. The cyclooxygenases (COXs) are a family of enzymes, which catalyze the rate-limiting step of prostaglandin biosynthesis. This family contains three members: ubiquitously expressed COX-1, which is involved in homeostasis; the inducible COX-2 isoform,



which is upregulated during both inflammation and cancer; and COX-3, expressed in brain and spinal cord, whose functions remain to be elucidated. COX-2 was described to modulate cell proliferation and apoptosis mainly in solid tumors, that is, colorectal, breast, and prostate cancers, and, more recently, in hematological malignancies stress⁷.

Placentrex contains nucleotides, amino acid, peptides and vitamins in natural form. Placentrex enhances wound healing significantly. It increases collagen synthesis and improves tensile strength of the healing tissue.⁸ Patel H.D conducted a comparative study of placentrex gel versus povidone iodine in non-healing wounds on 40 patients each. Placentrex Gel was found to be effective even in presence of pus serum, blood and slough. Similar study done by Subramaniam observed that in indolent ulcers, Placentrex Gel dressing seems to free the lesion from infection and then produces adequate granulation tissue formation and healing enough to facilitate, if necessary skin grafting. A similar study was done by Pote for comparative evaluation of povidone iodine ointment and Placentrex Gel as topical Agents in superficial burns. It was found that patients treated with Placentrex Gel, wounds healed significantly earlier than those with povidone-iodine ointment. Placentrex Gel was found to be more acceptable than povidone iodine ointment. A study was carried out, as a retrospective analysis, on oral cancer patients undergoing concurrent chemoradiation with weekly Cisplatin regimen treated between Oct 2015 and July 2017. All the patients received 2ml of Placentrex injection, once daily administered intramuscularly for 4 weeks, NSAIDs, topical analgesics, and mouth wash as treatment for oral mucositis. The results were compared with a historical

control group of 40 oral cancer patients who had received treatment prior to the study period without receiving Placentrex as a part of oral mucositis management. Over 60% of the patients in both groups were older than 60 years of age. Buccal mucosa was the predominant sub site of the investigated cancer type. The addition of placentrex resulted in delay in the progression of mucositis, reduction of treatment breaks, regression of pain, and improvement of dysphagia while leading to no adverse effects ($p < 0.05$).⁹ Kamble AT et al conducted a study on 200 patients of various types of wounds. Equal number of patients of various types of wounds were randomly selected for the local treatment with Placentrex, collagen, vitamin C and insulin. Cleaning and debridement was done to all patients with infected wounds and systemic antibiotic was given according to sensitivity. It was observed that Mean percentage reduction for Placentrex group was 88.22 ± 8.90 , for Collagen group it was 83.60 ± 12.57 , Insulin group was 37.40 ± 16.26 and for Vitamin C it was 31.80 ± 18.26 . By using one-way ANOVA significant variation is found in all four treatment groups ($F = 212.18$, $p\text{-value} = 0.000$). After comparing all four groups by using TUKEY multiple comparison test significant difference is found between Insulin-Collagen, Insulin-Placentrex, Collagen-Vitamin C and Placentrex-Vitamin C. Mean percentage reduction is more in Placentrex group.¹⁰ We conclude from this study that Placentrex Gel satisfies most of the criteria of an ideal dressing material, and in coming years it has the potential to become a gold standard for dressing of non-healing ulcers.⁹ We administered Placentrex injection to reduce swelling and enhance the penetration of drugs in our case of antibioma. The swelling reduced without any further complications.



4. Conclusion

We have presented a rare case of antibioma in the canine space region. It was treated promptly with administration of COX-2 inhibitors and subcutaneous placentrex injection. The pain and swelling was relieved and the patient is remaining disease free on follow up.

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Figures with Legends:



Figure 1– Clinical picture showing the swelling on face up to lower eyelid.



Figure 2- Clinical picture showing intraoral wound healing after canine extraction & reduced vestibule depth.



Figure 4- CT scan showing the enlarged soft tissue swelling on the right side.



Figure 3- CT scan showing the soft tissue swelling on the right side with enlargement of nasal mucosa and constriction of right nasal space.



Figure 5- Clinical picture showing the reduction of swelling after administration of COX-2 inhibitors and subcutaneous injection of Placentex