Myospherulosis in the Maxillary Sinus - A Case Report

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Abstract-

Myospherulosis is an uncommon chronic inflammatory condition characterized by lipid deposition and granulomatous response, often triggered by exposure to chemicals, medicated dressings, or ointments containing petrolatum or tetracycline. This case report details a rare instance of myospherulosis in the jaw, presenting as a delayed complication of alveolar osteitis following dental extraction.

Keywords: Myospherulosis, Alveolar Osteitis, Maxillary Sinus, Granulomatous reaction, Iatrogenic complication

INTRODUCTION

Myospherulosis is an infrequent chronic inflammatory condition where lipid deposition occurs. It resembles fungal spores but no specific microbial infectious agents are involved in the causation.

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The inflammation occurs secondary to the use of chemicals, medicated dressings, or ointments. This specifically occurs with the use of petrolatum or tetracycline containing products. As a result, a granulomatous response is initiated in the body and lipid-filled cysts are formed surrounding the chemicals.

The incidence of myospherulosis is a rare occurrence in the jaw and is generally reported as a late complication of alveolar osteitis (dry socket).[2] Alveolar osteitis occurs after dental extraction when the thrombus (blood clot) formed at the site of

a tooth extraction either fails to establish completely or is dislodged, exposing the underlying bone and nerves. This can lead to significant pain and delayed healing. When certain medicated dressings are used to manage the pain and inflammation of a dry socket, there is a risk that these materials can induce myospherulosis. The petrolatum or other substances in the dressings can react with tissues in the socket, leading to the characteristic cyst formation and granulomatous reaction associated with myospherulosis.

CASE REPORT

A 50-year old female reported to the out patient department of Oral medicine and Radiology, Teerthanker Mahaveer Dental College and Research Centre with a chief complaint of severe pain in the right upper back tooth region. Her past dental history revealed that she had undergone extraction of the right maxillary first molar five weeks ago. After about four days of extraction, the patient reported back to the dentist with severe pain in that region of tooth extraction. She was diagnosed with alveolar osteitis (dry socket) in that region. An intra-alveolar dressing containing zinc-oxide eugenol paste was given in that region to relieve pain and subside the associated inflammation. During the intra-alveolar procedure, the dentist inadvertently applied excessive force, causing the eugenol pack to be pushed into the maxillary sinus by breaching the floor of the maxillary sinus cavity. Both the dentist and the patient were unaware of this iatrogenic incident. This was later evident during radiographic examination.

Six weeks later, the patient started to experience pain in the same maxillary jaw region and the patient complained of throbbing pain which was severe in intensity, continuous in nature, radiating in character that radiates towards the whole of the upper face. Cone-beam computed tomographic images were advised as a part of the investigatory process. The sagittal section of the CBCT image revealed localized, ovoid hyperdense mass, three in numbers at the mid level of maxillary sinus. The HU unit of this hyperdense mass was in the range of +3700 to +4200, suggestive of a dense mass with radiographic attenuation more than that of enamel. Each hyperdense mass measured approximately 0.5-2 cm in diameter. The maxillary sinus mucosa shows thickening surrounding the hyperdense masses. There was a thin hypodense halo

surrounding the hyperdense masses. Based on the history of presenting illness, clinical examination, and CBCT examination, it was provisionally diagnosed as myospherulosis in the maxillary sinus region. Treatment was planned to surgically remove medicament packs through oroantral communication in the extracted socket region and after complete removal of medicament packs, the area was debrided and irrigated with saline. Histopathological examination shows no evidence of fungal infection and reveals granulomatous reaction. The final diagnosis was myospherulosis in the maxillary sinus. Patient was prescribed antibiotics and analgesics following the procedure for one week.

Figure 1. Sagittal view of CBCT image reveals localized hyperdense mass in the body of maxillary sinus

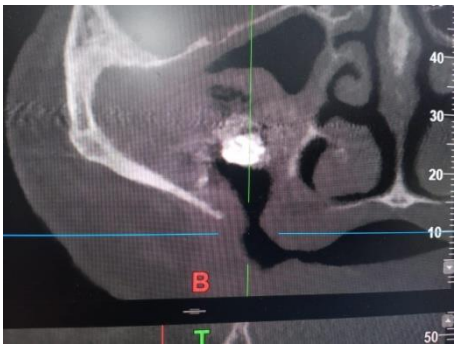

Figure 2. Coronal view of CBCT image reveals localized hyperdense mass surrounded by hypodense halo. Discontinuity in the floor of maxillary sinus reveals oroantral communication measuring 3 to 4 mm in diameter

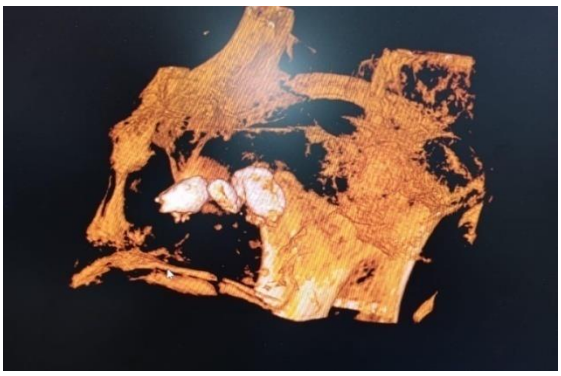

Figure 3. 3D Reconstruction View of body of maxillary sinus with evidence of medicament pack

Figure 4. Surgical exploration of medicament pack through oroantral communication in the extracted tooth region

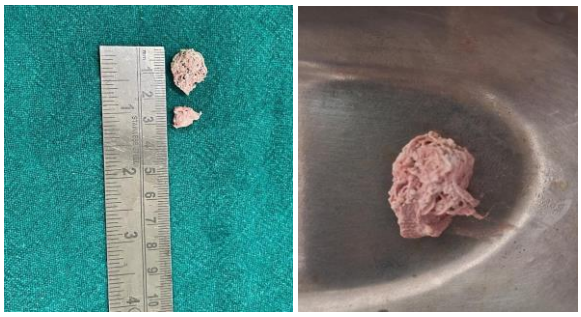

Figure 5. Post operative picture displaying the removed medicament dressing from the maxillary sinus

Figure 6. Post operative image after three weeks showing healing socket

DISCUSSION

Myospherulosis was first described in 1969 when the condition was identified in skeletal muscle tissue of people who had undergone surgeries and treatments involving the use of petrolatum-based ointments. [1] Initially, myospherulosis was considered to be an infectious process due to the presence of round, spherule-like structures within cystic formations, which resembled fungal spores. However, subsequent studies confirmed that these structures were not infectious agents but rather a result of the inflammatory response by the body to foreign lipid material.

Myospherulosis occurs as a granulomatous reaction to lipid-containing materials in the surgical dressings or ointments.[6] This mainly includes petrolatum or antibiotics infused products. These materials, when introduced into tissues, can form lipid vacuoles that incite a foreign body reaction. Microscopically, myospherulosis is characterized by cysts filled with lipid material and the distinctive spherules, which are actually degenerated red blood cells encapsulated by lipids. [3]

Myospherulosis in the jaw is particularly noteworthy due to its occurrence as a complication following dental procedures, especially tooth extractions and the treatment of dry socket.

Patients with myospherulosis in the jaw typically present with persistent pain, swelling, and sometimes a palpable mass at the site of the previous dental extraction. The condition can be misdiagnosed as a persistent infection or neoplastic process.

This is evident through a case report by

Ramon Navas et al. detailing a patient who developed myospherulosis following the treatment of a dry socket with zinc oxide eugenol dressing.[2] Similarly, a study by Har-El et al. in 1984 described cases where petrolatum-based dressings led to the condition, emphasizing the need for awareness among dental professionals regarding the materials they use.

The primary treatment for myospherulosis involves the surgical excision of the affected tissue. This approach not only alleviates symptoms but also prevents recurrence. Awareness and education about the potential risks of certain medicated dressings are crucial in preventing this condition. Using alternative materials that do not provoke such a granulomatous response can significantly reduce the incidence of myospherulosis following dental procedures.[4]

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