J. Maxillofac. Oral Surg. (Jan–Mar 2019) 18(1):30–33
https://doi.org/10.1007/s12663-017-1074-z

CLINICAL PAPER

Orbital Subperiosteal Abscess Associated with Mandibular Wisdom Tooth Infection: A Case Report

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Received: 25 April 2017 / Accepted: 11 December 2017 / Published online: 14 December 2017

Abstract
Background Orbital infection related to mandibular third molar infection is extremely rare. Most of cases reported in literature are related to maxillary molar teeth. Odontogenic infections are not common causes of orbital abscess but it should always be put in consideration when dealing with orbital cellulitis and abscess.
Case presentation This is a case of orbital abscess involving the left eye as consequence of lower left third molar infection in otherwise healthy 35-year-old black male patient. CT scan confirmed the unusual pathway of this space infection from the lower third molar and excluded any intracranial involvement. The abscess was drained immediately by intraoral incisions and the tooth was extracted. There was a dramatic improvement in a very short time with normal eye movement.
Conclusion This case demonstrates one of the serious consequences of odontogenic infection which may lead to cavernous sinus thrombosis and blindness if not treated promptly.

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Keywords Odontogenic infection · Third molar · Orbital abscess

Abbreviation

CT	Computer tompgraphy
MRI	Magnetic resonance imaging
ENT	Ear nose and throat

Introduction

Subperiosteal abscess (SPA) of the orbit is a suppuration between the orbital bones and the periorbita which require an aggressive surgical approach, rather than observation of the antibiotic response [1]. It has been reported as the rarest kind of abscess in the maxillofacial region with a prevalence of only 1.3% while perimandibular abscess was 45% [2]. Harris reported seven cases of SPAs which were associated with acute sinusitis and phlebitis of the scalp vein [1]. The paranasal sinusitis is the predominant cause of 80% SPA with the ethmoidal sinusitis being the most common source [3].

Odontogenic infection is a rare cause of orbital inflammation. Gans et al. reported 190 patients with orbital inflammation where only 2% had an odontogenic source. Despite this rarity, it is a serious infection which may lead to blindness if not treated properly [4]. In 2013, Tavakoli et al. reported one case of orbital cellulitis as a complication of mandibuar odontogenic infection [5].

To our knowledge, there were no many reports so far that shows orbital abscess as a consequence of mandibular wisdom tooth infection. Obviously, most of the cases reported in the literature were related to maxillary teeth [6, 7].

Case Presentation

A 35-year-old black male presented with left facial and periocular swelling of 5 days duration. Patient was initially seen by an ophthalmologist who at first prescribed ciprofloxacin solution and tetracycline eye ointment. Two days later, he was referred to our dental hospital for assessment and further management. There was a left facial swelling with pus discharging from the lower conjunctival fornix of the left eye. Regarding medical history, the patient was fit with no history of trauma, hospitalization, or current medication except those prescribed by the ophthalmologist.

Initial examination revealed an extensive swelling involving the left buccal region, inability to open the left eye because of extensive upper and lower eyelids edema (Fig. 1). There was left eye proptosis, tenderness, and limitation of ocular movements in upward and lateral gazes (Fig. 2). There was obvious purulent discharge from the lower conjunctival fornix of the left eye. Visual acuity was disturbed on the affected eye. On intraoral examination, there was trismus with maximum interincisal opening of 30 mm, both the left mandibular second and third molars were carious, and the lower wisdom was tender to percussion. Panoramic radiograph demonstrated a radiolucency around the distal root of the lower left wisdom tooth (Fig. 3). CT scan revealed a soft tissue swelling and

Fig. 1 Left facial swelling with left eye proptosis

Fig. 2 Pus discharging from the lower conjuctival fornix of the left eye

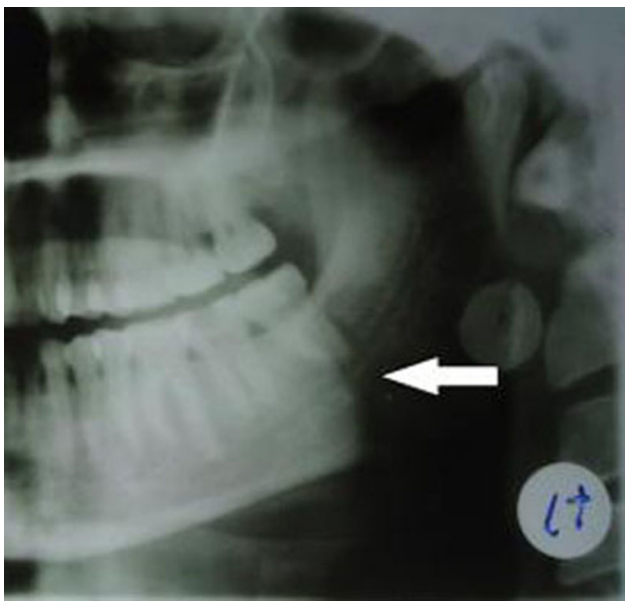

Fig. 3 OPG showing the periapical infection associated with the left lower third molar

multiple air bubbles in the subcutaneous area of left buccal region extending to zygomatic region up to the level of the orbital roof (Fig. 4). Medially, similar changes noted in left infratemporal fossa and parapharyngeal space at the level of the oropharynx (Fig. 5). A CT of brain was done to exclude the possibility of cavernous sinus thrombosis (Fig. 6).

Treatment started with upper and lower buccal vestibule incisions under local anesthesia to drain the buccal abscess, followed by normal saline irrigation and corrugated rubber drains inserted and secured with intraoral sutures. The left eye was irrigated with normal saline to wash out the spontaneously discharged pus from the lower fornix. The patient was admitted to hospital with immediate intravenous fluids and broad spectrum antibiotic (ceftazidime 1 g, metronidazole 500 mg). After 6 h, the wisdom tooth was extracted and the wound washed and irrigation of intraoral incisions twice/day followed. In the immediate postoperative period, the proptosis subsided, and the eye movements were back to normal after 4 days (Fig. 7). The drain was removed on day 5, and the patient discharged on the day 6 on oral antibiotics for further 7 days.

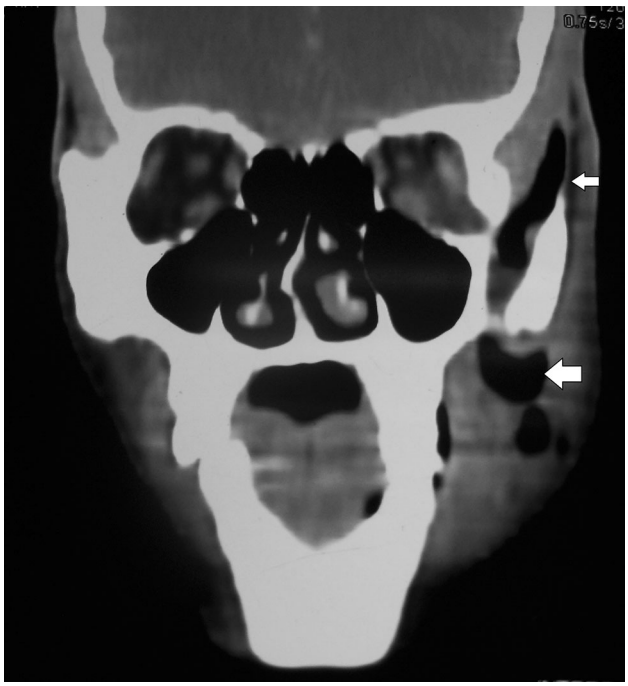

Fig. 4 CT scan showing the extent of emphysema in the left buccal region extending to zygomatic region up to the level of the orbital roof. Abnormal densities are noted in the infratemporal part of the left orbit and the cross section of the inferior and lateral recti muscles are increased due to the inflammation

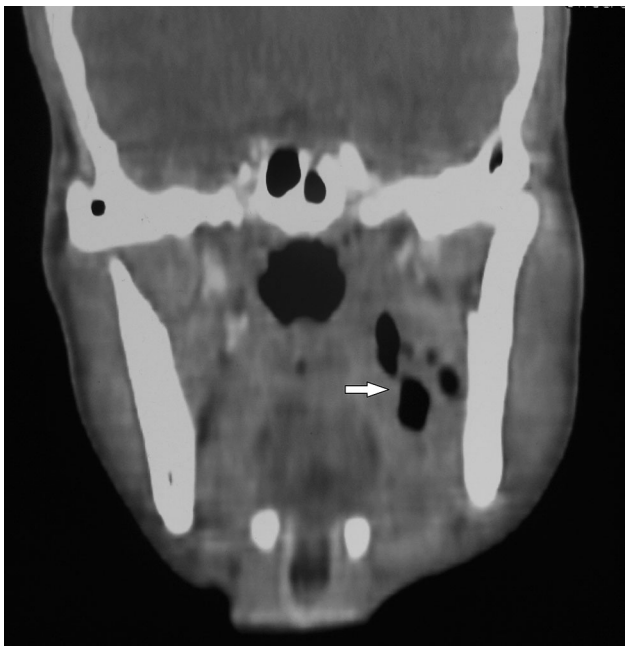

Fig. 5 CT scan showing emphysema in left infratemporal fossa and parapharyngeal space at the level of the oropharynx

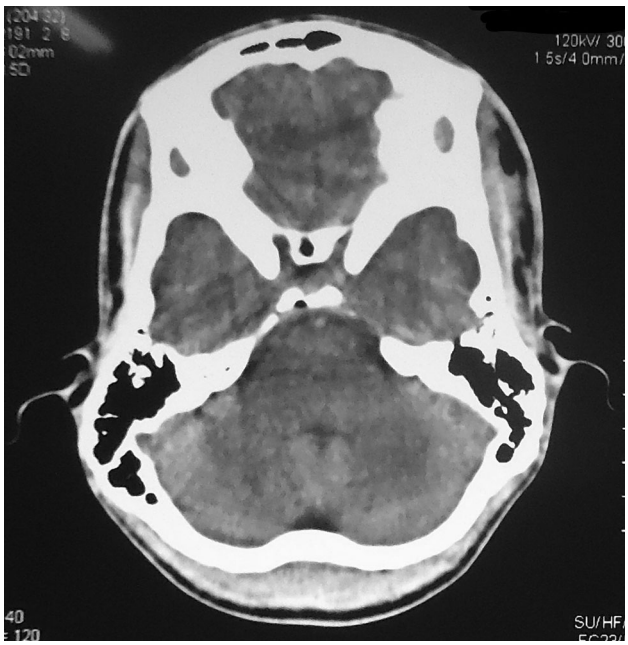

Fig. 6 CT brain for cavernous sinus evaluation

Discussion

Odontogenic infections are the most common cause of admission in oral and maxillofacial departments in Sudan. Odontogenic infections have high incidence and morbidity hence its seriousness if not treated promptly and adequately [7]. They are usually the result of prolonged patient neglect of simple dental problems and sometimes unsuccessful

Fig. 7 Patient picture at discharge (sixth day) with normal eye movement

dental treatment. In severe odontogenic infection, surgical treatment and antibiotics must always be used in conjunction. Anatomical factors play a key role in odontogenic infections spread. It tends to follow the lines of least resistance, which are dictated by the bone, periosteum, muscles and fasciae. Other factors involved are the host immunity and systemic condition [8].

Indications for surgical intervention in orbital abscess include large abscesses with significant mass effect, compression of the optic nerve and threatening the vision, concurrent intracranial involvement, pansinusitis, poor response to initial medical treatment, and the presence of gas.

The orbit infectious afflictions can have numerous sources, either the eye or surrounding tissues. Orbital infections can have numerous sources, either the eye or as a consequence of spread of infection from neighboring structures [2]. Orbital valveless veins play an important role in infection transmission from surrounding regions because of its direct contact with facial vein, pterygoid plexus and cavernous sinus. Chandler et al. classified orbital infections into (1) inflammatory edema, (2) orbital cellulitis, (3) subperiosteal abscess, (4) orbital abscess, and (5) cavernous sinus thrombosis [9]. The conduction mode of OI to the orbit can be via the maxillary sinus, the canine fossa, pterygopalatine, and infratemporal fossa through the inferior orbital fissure, and cheek through soft tissues [2]. The latter two pathways were evident in this case with infection spreading as a consequence of carious mandibular wisdom tooth. It is important to mention that CT scan is not the imaging of choice to differentiate the soft tissues densities and detecting the route of infection and MRI is a better tool.

Conclusion

Subperiosteal abscess of the orbit is a rare but serious infection with possibility of visual loss. Patients may not present with any dental complaint, so that the dental origin may be unsuspected during the first days. It is important for the clinician to consider the rare causes of orbital abscess and cellulitis. Odontogenic causes should always be considered as possible causes.

Acknowledgements We would like to thank all house officers in Khartoum Teaching Dental Hospital who were involved in treating this patient.

Compliance with Ethical Standards

Conflict of interest The author(s) declare that they have no competing interests.

Informed Consent Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Ethical Approval Ethical approval was obtained from ethics committee, Khartoum teaching dental hospital.

References

1. Harris GJ (1983) Subperiosteal abscess of the orbit. Arch Ophthalmol 101:751–757
2. Blake Felix Alexander Samuel, Siegert Joacbim, Wedl Juergen, Gbara Ali, Scbmelzle Rainer (2006) The acute orbit: etiology, diagnosis, and therapy. J Oral Maxillofac Surg 64:87–93
3. Kim IK, Kim JR, Jang KS, Moon YS, Park SW (2007) Orbital abscess from an odontogenic infection. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 103:e1–e6
4. Park CH, Jee DH, La TY (2013) A case of odontogenic orbital cellulitis causing blindness by severe tension orbit. J Korean Med Sci 28:340–343
5. Tavakoli M, Bagheri A, Faraz M, Salehirad S, Roghaee S (2013) Orbital cellulitis as a complication of mandibular odontogenic infection. Ophthal Plast Reconstr Surg 29:5–7
6. DeCroos FC, Liao JC, Ramey NA, Li I (2011) Management of Odontogenic Orbital Cellulitis. J Med Life 4(3):314–317
7. Munoz-Guerra MF, Gonzalez-Garcia R, Capote AL, Escorial V, Gias LN (2006) Subperiosteal abscess of the orbit: an unusual complication of the third molar surgery. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 102:e9–e13
8. Uluibau IC, Jaunay T, Goss AN (2005) Severe odontogenic infections. Aust Dental Journal Med Supplement 50:s74–s81
9. Abdelwahhab AA, Hussein IA (2010) Cavernous sinus thrombosis as a fatal complication of a dental abscess: a case report. J Royal Med Serv 17:20–23