Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/18695
DOI URL: http://dx.doi.org/10.21474/IJAR01/18695

RESEARCH ARTICLE

A REPERTOIRE OF ACUTE DACRYOCYSTITIS

Dr. Chaiti Aranke and Dr. Waman Chavan
Pravara Institute of Medical Sciences, Loni, Ahmednagar, Maharashtra.

Manuscript Info

Manuscript History
Received: 10 March 2024
Final Accepted: 14 April 2024
Published: May 2024

Key words: -
Pre-Septal Cellulitis, Odontogenic Focus, Lacrimal Abscess, Orbital Cellulitis

Abstract

Background: Clinical features of acute dacryocystitis comprise of three stages- stage of cellulitis, lacrimal abscess and fistula formation. Infective odontogenic focus is one of the known etiologies for acute dacryocystitis. Pre-septal cellulitis is the most common presentation associated with epiphora. Tenacious inflammation of sac or distal nasolacrimal duct obstruction can result in a lacrimal abscess. Unattended abscess may consequently form a fistula. Acute dacryocystitis rarely can get complicated to cause orbital cellulitis overstriding the anatomic barriers.

Case Presentation: Case1: A 72/F complained of toothache since a week, followed by diffuse swelling below lower eyelid, pain and discharge near medial canthus. The case was diagnosed as acute dacryocystitis with pre-septal cellulitis due to apical abscess of right maxillary molar which was visualised on orthopantomogram. Case2: A 36/M presented with mild pre-septal cellulitis and lacrimal abscess. Case3: A 79/M presented with diminution of vision, pain and inability to move the right eye. He had history of watering for8 years. He was diagnosed to have orbital cellulitis with fistula secondary to acute on chronic dacryocystitis.

Discussion: Case 1: Symptoms resolved spontaneously with emergency access opening of right first maxillary molar and systemic intravenous broad-spectrum antibiotics. She further underwent dacryocystectomy with fistulectomy. Case 2: Lacrimal abscess was managed with incision and drainage followed by dacryocystorhinostomy. Case 3: Orbital cellulitis was managed with broad-spectrum intravenous antibiotics. Dacryocystectomy with fistulectomy was performed after the eye was quiet.

Conclusion: Presentation of dacryocystitis can have variable causes hence proper history and addressing underlying cause at the earliest can help in early resolution. Aggressive management of complications can help in steady subsidence without progression.

Introduction:-

Infection of the lacrimal sac termed dacryocystitis, may be acute or chronic and causative agent is most commonly *Staphylococcal* or *Streptococcal*.[1]The sequence of progression usually starts with nasolacrimal duct obstruction, followed by stagnation of tear fluids, bacterial overgrowth and an acute infection.[2]Acute dacryocystitis may

Corresponding Author:- Dr. Chaiti Aranke
Address:- Pravara Institute of Medical Sciences, Loni, Ahmednagar, Maharashtra.

develop as an acute exacerbation of chronic dacryocystitis or due to focus of infection in neighbouring structures like paranasal sinuses, surrounding bones and dental abscess or caries teeth in the upper jaw.

Clinical features of acute dacryocystitis can be divided into three stages as-

1. **The stage of cellulitis** which is characterised by rapid onset of painful swelling in the region of lacrimal sac with erythema and pre-septal cellulitis with or without pre-existing epiphora.
2. **The stage of lacrimal abscess** in which the lacrimal sac distends due to pus collection.
3. **The stage of fistula formation** when the lacrimal abscess discharges spontaneously if left unattended.

Constitutional symptoms like fever and malaise may be present. [1,3,4] Untreated cases may present with complications which commonly include orbital cellulitis, orbital abscess, and rarely may manifest as cavernous sinus thrombosis, meningitis and necrotisingfasciitis. [2,4]

Cases

Case 1: Right Sided Acute Dacryocystitis Secondary to Periapical Abscess of Right First Maxillary Molar

A 72-year-old female presented with swelling around the right eye associated with moderate to severe pain, discharge and redness for 5 days. The patient reported that the swelling started spontaneously following severe toothache in the right upper jaw. Analgesics provided temporary relief. There was no history of diabetes mellitus or any addiction. Visual acuity and extraocular movements were intact and pupillary reactions were normal.

On physical examination, tender, erythematous oedema around the right periorbital region with local rise in temperature and fistula near the medial canthus was noted. On sac syringing from the right inferior punctum, purulent discharge oozed out of an inferomedial opening indicating a fistula.

Fig. 1:- Acute dacryocystitis with pre-septal cellulitis with fistula.

On intraoral examination, a carious right first maxillary molar was observed which was tender on the percussion test. An orthopantomogram revealed a periapical radiolucency associated with the right first maxillary molar (16- according to the 'FDI- two-digit numbering system') indicating periapical abscess. An 'emergency access opening' of 16 was done under local anaesthesia.

Intravenous antibiotic regimen of amoxicillin-clavulanic acid combination was started. Analgesics and antihistaminics were also prescribed. Symptoms resolved over 2 weeks followed bydacryocystectomy.

Fig. 2:- Periapical radiolucency of the carious right first maxillary molar (16).

Fig.3:- After the resolution of symptoms.

Case 2.: Lacrimal Abscess with Mild Preseptal Cellulitis

A 36-year-old male visited because of a week-old history of an erythematous, warm, fluctuant well-defined swelling localised inferiorly to the medial canthus of the left eye, without purulent regurgitation on applying pressure over the lacrimal sac area with mild pre-septal cellulitis. He mentioned a similar episode of a swelling 6 months back which was drained. There was no history of fever or any impairment in visual function or ocular movements.

Fig. 4:- A lacrimal abscess around 2.5 cm * 2 cm dimensions with mild pre-septal cellulitis.

The abscess was incised and drained and after healing by secondary intention over a week's time. No ectropion or fistula were seen following healing. Dacryocystorhinostomy was performed to avoid recurrence.

Fig. 5:- After incision and drainage.

Fig. 6:- A week after incision and drainage. The wound was dry and no discharge could be expressed. No evidence of ectropion.

Case 3: Orbital Cellulitis Secondary to Acute on Chronic Dacryocystitis

A 78-year-old male presented with diminution of vision in the left eye, restricted eye movements, purulent discharge, throbbing pain and redness which developed over 6 days. He reported a history of watering in the concerned eye for 8 years. Patient was systemically clean and did not have any history oftrauma, cold or facial pain. He was afebrile and vitals were normal. Visual acuity was reduced to CF 2m (counting fingers 2m).

Scaling of periocular skin, mechanical ptosis of the right lid, matted eyelasheswith profuse discharge and fistula inferiorto medial canthus was observed. Pupillary light reflexes were intact. Colour vision was normal. There was restriction of extraocular movements, proptosis, chemosis and congestion of conjunctiva of the right eye. ROPLAS test was positive. Blood investigations were within normal limit.

The patient was started on intravenous antibiotic regimen of amoxicillin and clavulanic acid combination, metronidazoleand oral NSAIDs.Orbital cellulitis and proptosis was reported on CT contrast orbit and paranasal sinuses.

Fig. 7:- Profuse periorbital swelling with fistula inferior to medial canthus with matted eyelashes.

Fig. 8:- Proptosis with downward and slight lateral displacement of eyeball; profuse discharge.

Fig. 9:- CT contrast PNS Orbit (axial view):

1. Bulky medial rectus with enhancement on post contrast study with adjacent fat stranding.
2. Thinning and erosion of lamina papyracea.
3. Soft tissue oedema involving pre-septal, periorbital, premaxillary region.
4. Evidence of proptosis.

With resolution of symptoms in 2 weeks following the medical management, visual acuity improved to 6/18.Dacryocystectomy was performedafter resolution.

Fig. 10:- After resolution of symptoms.

Discussion:-

Acute dacryocystitis can present as a pre-septal cellulitis which involves soft tissue in the pre-septal area.[5]Odontogenic infections can spread to orbital and periorbital regions via direct spread into maxillary sinuses or indirectly via canine fossa with facial vein thrombophlebitis.

In the patient presented in **case 1** with periapical abscess of right first maxillary molar, it is likely that the infection entered the buccal cortices to the respective maxillary sinus to involve pre-septal soft tissues.[6]

When the lacrimal sac gets distended with pus to form an abscess, it expands anterolaterally and inferiorly. Early incision and drainage of lacrimal sac abscess is a simple procedure resulting in immediate resolution of pain and promotes rapid healing as in the patient in **case 2.**[7]

Orbital cellulitis is a vision threatening infectious process involving the ocular adnexal structures posterior to orbital septum. It rarely occurs secondary to acute dacryocystitis and responds well to systemic antibiotics and surgical drainage without permanent visual loss if intervened in time.

Kikkawa et al found that a prior episode of dacryocystitis is a risk factor for orbital extension by distension of sac and disruption of its posterior barriers increasing likelihood of posterior rupture and spread.Deep heads of pre-septal and pre-tarsal orbicularis muscles function as the primary posterior barrier. The insertions of orbital septum and medial canthal ligaments fortify the posterior barrier further. Once this barrier is breached, a channel of communication can form between the inferior rectus and medial rectus muscles into the intraconal space because of the anteroinferior location of lacrimal sac with respect to the globe.[8]

Other causes include spread of infection to ethmoid sinus via lamina papyracea, hematogenous spread from other systemic causes and in some cases primary orbital cellulitis that can extend to lacrimal sac before the presence of dacryocystitis.[5]

The patient mentioned in **case 3** had a long-standing history of epiphora.An acute on chronic presentation of distension and inflammation of the lacrimal sac may have resulted in posterior rupture and orbital extension causing orbital cellulitiswiththinning and erosion of lamina papyracea as evident on axial view on CT contrast PNS orbit.

Even in the absence of dacryocystitis, it is possible that chronic distention of the lacrimal sac can lead to weakness and predisposition to posterior rupture.[9]

Difficulty in obtaining blood cultures, low rates of culture positivity and lack of randomized trials for antibiotic regimens for treatment of pre-septal cellulitis necessitates empiric treatment in almost all cases based on knowledge of the common infecting organisms (*Staphylococcus aureus*, *Streptococcus pneumoniae*, other *Streptococci* and anaerobes) and their usual susceptibility patterns. [10]

Most cases of orbital cellulitis can be managed with oral or IV antibiotics. Subperiosteal abscess, an orbital abscess, loss of vision, destructive sinus disease, and intracranial extension are some of the potential complications and need to be looked for. Subperiosteal abscess and orbital abscess formation are most common complications and can have an acute onset.[11]

Anosike et al found that management using medical therapy alone for a duration of less than 3 weeks appeared to be effective in a large fraction of their 11-year cohort study of children having orbital cellulitis with 95.9% of the cohort experiencing resolution of disease within 30 days thereby suggesting that despite the potential for serious complications in orbital cellulitis, 2-3 weeks can be termed as an adequate length of therapy for uncomplicated cases.[12]

Early diagnosis and intervention is essential as raised tissue pressure can result in retrobulbar neuritis or compression of the optic nerve or hampering its blood supply at the apex of the orbit which can cause a decrease in the visual acuity. Raised tissue pressure is caused due to inflammatory oedema of the extraocular muscles, orbital fat and congested veins. Hence, patients suspected to have orbital cellulitis should be assessed daily for visual acuity and pupillary reactions. Absent or sluggish pupillary light reflex could indicate optic nerve involvement. Fundus examination should be performed in all possible cases. [11,13]

Conclusion:-

Presentation of dacryocystitis can have a variety of causes hence proper history and addressing underlying cause can help in early resolution. Aggressive management of complications can help in steady subsidence without progression. Daily monitoring of visual acuity and pupillary light reflexes in cases of orbital infections carries high prognostic value.

References:-

1. Bowling B. (2016). Lacrimal Drainage System. Kanski's Clinical Ophthalmology A Systematic Approach (pp. 63-73). Elsevier.
2. Prajna V.N. (2019). Diseases of Lacrimal Drainage System. In M. Goldberg (Ed.), Peyman's Principles of Ophthalmology (pp. 1793-1806). Jaypee Brothers Medical Publishers.
3. Ali MJ, Joshi SD, Naik MN, et al. Clinical profile and management outcome of acute dacryocystitis: two decades of experience in a tertiary eye care centre. Semin Ophthalmol. 2015; 30(2): 118-23.
4. Khurana A.K. (2017). Dacryocystitis. In A Grover, S Honavar, B Khurana, A Khurana (Eds.), Disorders of Eyelids, Lacrimal System, Orbit and Oculoplastic Surgery (pp. 264-272). CBS Publishers and Distributors.
5. Aslalamah A, Alkatan H, Al-Faky-Y. Acute dacryocystitis complicated by orbital cellulitis and loss of vision: A case report and review of literature. International journal of Surgery Case Reports 50 (2018) 130-134
6. Sharma A, Ingole S, Deshpande M, Ranadive P, Sharma S, Chavan A. An insight on management of odontogenic orbital infections: report of two cases. J Oral Med Oral Surg 2021; 27:41
7. Boulos P, Rubin P. A Lacrimal Sac Abscess Incision and Drainage Technique. ArchOphthalmol.2008;126(9):1297-1300
8. Kikkiawa D, Heinz G, Martin R, Nunery W, Eiseman A. Orbital Cellulitis and Abscess Secondary to Dacryocystitis. Arch Ophthalmol. 2002; 120(8): 1096-1099.
9. Pfeiffer M, Hacopian A, Merritt H, Phillips M, Richani K. Complete Vision Loss Following Orbital Cellulitis Secondary to Acute Dacryocystitis. Case Reports in Ophthalmological Medicine Volume 2016 (2016), Article ID 9630698, 3 pages.
10. Roy P, Kumar N. A Rare Case of Eyelid Abscess and Orbital Cellulitis Following Acute Dacryocystitis. IP International Journal of Ocular Oncology and Oculoplasty. 2021; 7(4): 415-417.
11. Stead T, Retana A, Houck J, Sleigh B, Ganti L. Preseptal and Postseptal Orbital Cellulitis of Odontogenic Origin. Cureus, 11(7): e5087. DOI 10.7759/cureus.5087.
12. Anosike B, Ganapathy V, Nakamura M. Epidemiology and Management of Orbital Cellulitis in Children. J Pediatric Infect Dis Soc. 2022 May; 11(5): 214-220. Doi: 10.1093/jpids/piac006.
13. Sihota R, Tandon R. (2020). Diseases of the Orbit. Parsons' Diseases of the Eye (pp. 437-439). Elsevier.