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JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Case Report

Open Access, Volume 6

Early recognition and management of acute neonatal dacryocystitis with dacryocystocele: A case report

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Received: Jun 02, 2025

Accepted: Jun 26, 2025

Published: Jul 03, 2025

Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/3664

Abstract

Acute neonatal dacryocystitis (AND) is a common ocular emergency in neonates, often associated with dacryocystocele. It typically presents with inflammatory swelling in the medial canthal region and can lead to serious complications if untreated. This case report describes a 10-day-old female neonate with AND complicated by dacryocystocele, successfully managed with antibiotics and surgical drainage. Early diagnosis and prompt treatment are crucial to prevent complications such as orbital cellulitis and vision loss.

Keywords: Case report; Neonatal dacryocystitis; Dacryocystocele; Lacrimal sac abcess.

Introduction

Acute neonatal dacryocystitis (AND) is a common ocular emergency in neonates, typically presenting within the first two weeks of life [1]. It is clinically characterized by inflammatory swelling of the medial canthal region and can rapidly progress to a lacrimal sac abscess with potential complications such as orbital cellulitis and abscess, which may jeopardize both visual function and overall health [2,3]. Dacryocystocele, a congenital anomaly of the lacrimal drainage system, predisposes neonates to early-onset AND. Despite its relatively low incidence, timely and comprehensive management of dacryocystocele is crucial. This case report presents a clinical case of acute neonatal dacryocystitis complicated by dacryocystocele, accompanied by a review of the relevant literature.

Case presentation

We report a case of a 10-day-old female neonate with an unremarkable antenatal history presented to the emergency department with a two-day history of inflammatory swelling in the right medial canthal region. The mother reported a subtle swelling since birth, which had recently become more pronounced. Physical examination revealed a fluctuant, erythematous, and tender mass over the lacrimal sac (Figure 1), The patient was afebrile, had no respiratory distress, and was in good overall health. Computed tomography (CT) imaging, both pre- and post-contrast, demonstrated a well-defined, fluid-attenuating lesion in the medial canthal region, with contrast enhancement of the lesion's wall, extending along the lacrimal duct into the ethmoid sinus (12 × 16 × 12 mm) (Figures 2 and 3). Periorbital and preseptal soft tissue infiltration and thickening were observed without intraorbital or subperiosteal extension, and globe and lens integrity were preserved. The laboratory workup revealed moderate leukocytosis (WBC: 14,500/mm^3, neutrophils: 72%), with elevated inflammatory markers (CRP: 40 mg/L, ESR: 55 mm/h, and PCT: 1.5 ng/mL), suggesting a bacterial infection. The patient underwent initial medical treatment consisting of intravenous (IV) antibiotics with Cefotaxime (50 mg/kg every 8 hours) and Vancomycin (15 mg/kg every 12 hours), along with local care, including warm compresses, gentle lacrimal sac massage, and topical Tobramycin eye drops (every 6 hours). Due to persistent swelling with purulent discharge, an incision and drainage of the lacrimal sac abscess was performed under local anesthesia. After five days, the patient was switched to oral antibiotics (Amoxicillin-Clavulanate for 7 days), with complete resolution of inflammation and no signs of recurrence at the one-month follow-up (Figure 4).

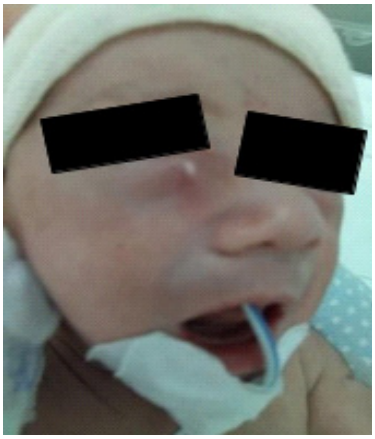

Figure 1: Right medial canthal swelling and inflammation consistent with acute dacryocystitis.

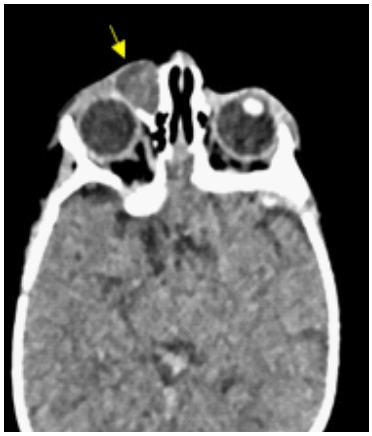

Figure 2: Axial CT scan demonstrating a right medial canthal mass with thick fluid content.

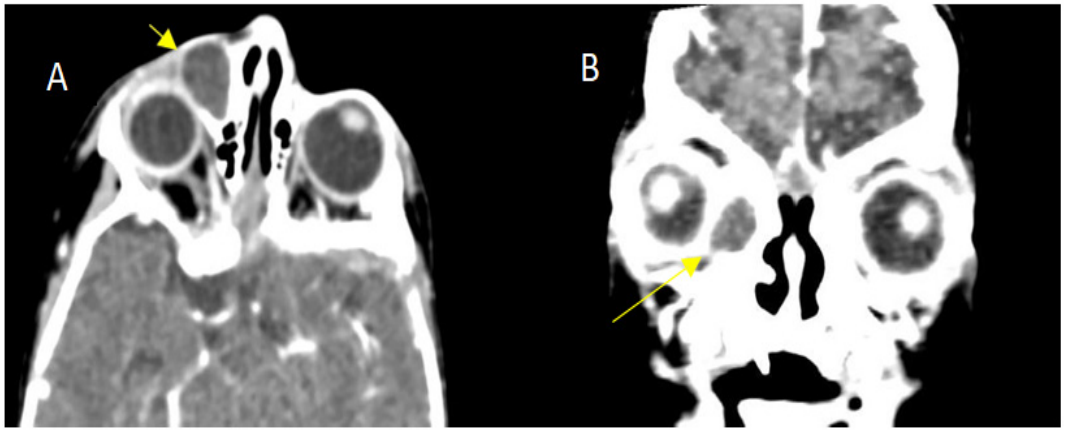

Figure 3: Axial **(A)** and coronal **(B)** facial CT scans post-contrast demonstrate peripheral enhancement of the medial canthal collection.

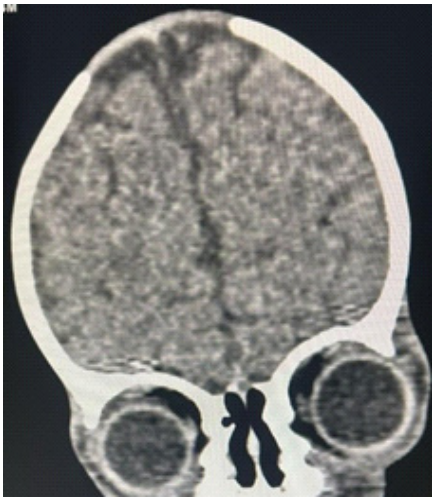

Figure 4: Scannographic section demonstrating the resolution of the medial canthal collection one month after treatment.

Discussion

The lacrimal drainage system is characterized by the presence of two unidirectional anti-reflux valves in the form of mucosal folds: Rosenmüller's proximal valve, which corresponds to the opening of the union duct into the lacrimal sac, and the nasolacrimal duct, which opens into the nasal cavity at the level of Hasner's distal valve. Lacrimal-nasal obstruction is an obstruction of the nasolacrimal duct at Hasner's valve [4].

The age of onset of acute neonatal dacryocystitis (AND) is typically within the first two weeks of life [1,5]. A female predominance has been reported [6]. Diagnosis is primarily clinical, characterized by inflammation and swelling of the medial canthal region, which may progress to a lacrimal sac abscess with potential external fistula formation and purulent discharge. Fever and leukocytosis may be present but are not essential for diagnosis [7]. Imaging studies, such as computed tomography (CT), may be indicated in cases of suspected orbital cellulitis or extensive infection. The most common causative organisms include Staphylococcus aureus, Haemophilus influenzae, and Streptococcus pneumoniae [8].

Differential diagnoses include congenital hemangioma, nasal glioma, encephalocele, and dermoid cyst [9]. Untreated AND can progress from the lacrimal sac to the surrounding orbital tissues. This can lead to preseptal cellulitis, orbital cellulitis, and orbital abscess. Orbital cellulitis can lead to optic nerve compression and vision loss [10]. Prompt medical and surgical intervention is crucial for the management of AND. Initial broad-spectrum antibiotic therapy should be initiated, followed by lacrimal probing after 24-48 hours of antibiotic treatment.

Conclusion

In conclusion, acute neonatal dacryocystitis (AND) is a common ocular emergency in neonates that can lead to significant complications if left untreated. Early diagnosis and prompt in-

tervention, including antibiotic therapy and lacrimal probing, are essential to prevent the progression of infection and potential visual impairment. This case report emphasizes the importance of early recognition and timely management of AND, particularly in cases complicated by dacryocystocele.

Declarations

Ethics approval: Our institution does not require ethical approval for reporting individual cases or case series.

Informed consent: Written informed consent was obtained from a legally authorized representative(s) for anonymized patient information to be published in this article.

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