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Orbital Cellulitis in Neonates: A Case Report

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Abstract **Case Report**

Orbital cellulitis is extremely rare in newborns, constituting an emergency that can jeopardize functional or vital prognosis. Early identification of symptoms and implementation of appropriate treatment are essential to ensure a good prognosis and reduce the risk of long-term complications. We report the case of a 16-day-old male newborn hospitalized for Left orbital cellulitis stage 3 according to the Chandler classification, treated with antibiotics and an evacuation puncture with a good outcome.

Keywords: Cellulitis - CT Scan - Chandler classification – Newborn - Emergency.

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INTRODUCTION

Orbital cellulitis is a formidable infection of the orbital contents. Its occurrence remains rare in neonates, its occurrence remains rare in newborns, constituting a diagnostic and therapeutic emergency that can impact functional or even vital prognosis. A computed tomography (CT)-scan of the orbit; with or without contrast injection; is the key examination for making a positive diagnosis, and sometimes for determining the etiology [1].

In this article, based on a clinical observation and a literature review, we will illustrate the clinical, paraclinical and therapeutic aspects of cellulitis in newborns.

CASE REPORT

We report the case of a 16-day-old male newborn, from a followed pregnancy estimated at term He presented to the pediatric emergency department with a progressively worsening swelling of the left eyelid evolving over 4 days in the context of a fever recorded at 40 degrees Celsius without other associated symptoms with an uneventful delivery. The patient had no specific medical history, particularly no history of trauma.

He presented to the pediatric emergency department with a left palpebral swelling that had been progressively worsening for 4 days in the context of a fever recorded at 40 degrees Celsius without other associated symptoms.

Clinical examination upon admission to the emergency department revealed a febrile newborn with a temperature of 39.8 degrees Celsius, stable hemodynamically and respiratorily, with good axial and peripheral tone, and present primitive reflexes.

On ophthalmological examination, the patient exhibited an inflammatory swelling of the left eyelid, warm and painful to touch, extending to the left jugal region. Opening of the left eyelid was difficult, with chemosis and esotropia of the left eye, without exophthalmos or conjunctival hyperemia. The pupillary light reflex was preserved, and the fundus examination was normal. otolaryngological examination, including the oral cavity and both nasal cavities, was normal (Figure 1).

Figure 1: Picture of the patient on first day of hospitalization showing a red eyelid swelling extending to the jugal region

Biologically, the patient presented with an inflammatory syndrome characterized by hyperleukocytosis at 36 000, predominantly neutrophilic at 32,500, with elevated CRP at 330. Blood culture and cerebrospinal fluid were sterile.

The orbitofacial and cerebral computed tomography (CT) scan revealed Chandler stage 3 left orbital cellulitis complicated by multiple left palpebral and jugal collections with filling of the ethmoidal cells and the left maxillary sinuses. (Figure 2).

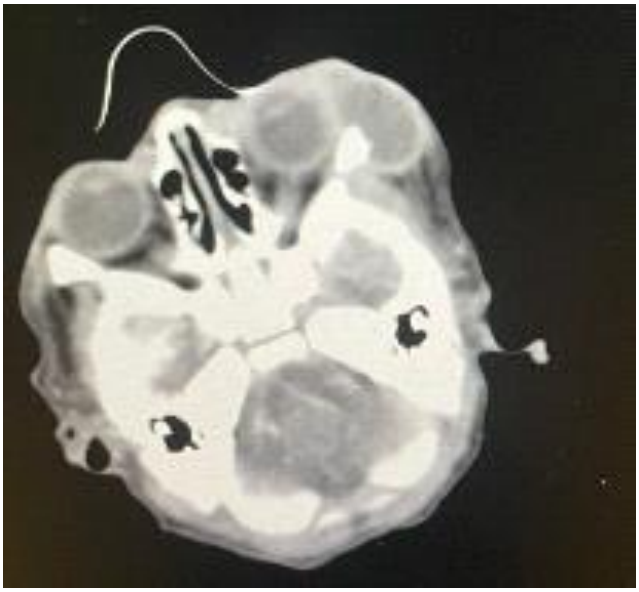

Figure 2: CT scanned image showing chandler stage 3 left orbital cellulitis with palpebral and jugal collections

The management consisted of evacuative puncture of the abscess along with initial triple antibiotic therapy consisting of ceftriaxone, gentamicin, and metronidazole for 72 hours, followed by continuation with ceftriaxone and flagyl for 15 days.

The clinical evolution was favorable after 72 hours with progressive reduction of clinical signs, particularly palpebral oedema, and improvement in laboratory findings, with CRP decreasing from 330 to 10. (Figure 3).

Figure 3: Picture of the patient on day 12 of hospitalization, showing clinical improvement

DISCUSSION

Orbital cellulitis in children is rare but potentially serious. Positive diagnosis is mainly based on clinical examination and imaging, mainly oculo-orbital CT scans [1].

A distinction is made between periorbital or pre-septal cellulitis, located in front of the orbital septum, which usually progresses favourably, and retro-septal cellulitis, defined as inflammation of the orbital tissue behind the orbital septum. This can clinically manifest with exophthalmos, strabismus, and impaired visual acuity, and which may lead to potentially serious complications [2].

Neonatal orbital abscess is extremely rare, usually resulting from contiguous spread from adjacent periorbital structures. The ethmoidal sinus is the most common source of orbital infection in children, especially neonates, accounting for over 90% of cases [3]. Sinus cavity formation continues until adolescence. The ethmoidal sinuses are formed mainly between the ages of 6 months and 5 years, maxillary sinuses from age of 3 years, and frontal sinuses after the age of 10 years. Thus, tissue planes in neonates constitute a less solid barrier to the spread of infection compared to older children and adults [4].

Neonatal orbital cellulitis is rarely described in the literature, apart from a few clinical cases. Most reported cases are secondary to sinusitis, particularly ethmoidal sinusitis. Cases of neonatal cellulitis of odontological origin have also been reported [5-7]. Orbital cellulitis can lead to potentially life-threatening intracranial complications such as meningitis, cavernous sinus thrombosis, and epidural or subdural abscesses formation [4, 8].

Any orbital cellulitis occurring in a newborn should be considered as a maternal-fetal infection until proven otherwise and requires hospitalization with blood cultures and possibly a lumbar puncture [9]. This was the case for our patient, in whom blood cultures and lumbar puncture were sterile.

Imaging is essential in cases of suspected orbital cellulitis. Conventional radiography is no longer indicated [1]. CT scan remains the imaging examination of choice, performed with thin sections centered on the orbits and sinuses, allowing for the identification and classification of different types of orbital cellulitis and for the detection of complications.

The Chandler's classification is the most widely used [10]. It also allows the progression of cellulitis to be graded. Thus, pre-septal cellulitis (grade I) can progress in the absence of treatment to grade IV or V [1].

The biological assessment typically reveals an inflammatory syndrome, which is in line with our patient's and those of Kojman *et al.*, [5].

Therapeutic management is urgent and is based on parenteral antibiotic therapy, sometimes combined with surgical drainage [1]. Rapid diagnosis and early intervention are necessary to ensure a favorable outcome [4]. Medical treatment must be initiated urgently and relies on the establishment of empiric parenteral antibiotic therapy targeting the most commonly encountered pathogens according to age [10-12]. Our patient was treated with triple antibiotic therapy, which aligns with the management established by Kojman *et al.*, In newborns, Staphylococcus aureus is reported as the most frequently isolated germ, along with Group B Streptococcus [5]. These findings differ from those of Kojman *et al.*, who identified Klebsiella pneumoniae as the causative pathogen, while in our patient the bacteriological culture results were negative.

CONCLUSION

Orbital cellulitis is a rare pathological entity in neonatology [13]. It represents a medical emergency that

can lead to potentially life-threatening complications, highlighting the importance of early diagnosis and appropriate therapeutic management.

Annex 1: Chandler's classification [14]

Stage I	Preseptal cellulitis or orbital inflammatory edema: This is the mildest clinical form, characterized by the formation of inflammatory edema in front of the orbital septum.
Stage II	Diffuse orbital cellulitis
Stage III	Subperiosteal abscess: It results from an accumulation of inflammatory debris and bacteria under the orbital periosteum.
Stage IV	Orbital abscess
Stage V	Cavernous sinus thrombosis

Conflicts of interest: None

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