Orbital cellulitis in children: experience of the pediatric service at mohammed v military hospital

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Abstract:

Background: Orbital cellulitis is a diagnostic and therapeutic emergency, jeopardizing the vital and functional prognosis. This study aimed to analyze the epidemiological, therapeutic and evolutional aspects of orbital cellulitis cases treated at the pediatric service at Mohamed V military hospital.

Patients and methods: retrospective study including all the children aged between 1 month and 15 years treated for orbital cellulitis at the pediatric service of the Mohamed V Hospital over a period of 3 years (1st January 2016-31st December 2019).

Results: 24 cases of orbital cellulitis were gathered. Age varied between 1 month and 15 years with a median of age of 6. years. Feminine predominance (58%) was noted .

The disease mainly involved the sinus (32%).Clinically, fever was present in 10 patients (41%),palpebral edema was universal, proptosis was noted in 5 cases(20.8%),chemosis and ptosis were noted in 4 cases(16.6%),bacteriological testing identified micro-organisms in 3 cases. An orbital CT scan was performed in all cases of our study, showing preseptal cellulitis in 14 cases (58.3%), orbital cellulitis in 3 cases(12.5%),and orbital abscess in 7 cases.

The medical treatment consisted of ceftriaxone, metronidazole and aminoside or amoxicilline clavulanic acid,corticosteroid therapy prescribed in 5 cases. Surgical treatment was indicated in 3 patients.

The outcome of All cases was favorable

Conclusion: The majority of our cases had a positive evolution highlighting the advantage of an early diagnosis, and adapted antibiotic and a multidisciplinary patient care making the need for surgery rarely necessary.

Background:

Orbital cellulitis in children is an acute inflammatory disease of infectious origin, it is a rare but potentially serious condition.

Two types of cellulite should be distinguished: pre-septal in front of the orbital septum and retro septal behind the orbital septum.

The diagnosis is essentially clinical and radiological.

The goal of this study was to share our experience in patient care when it comes to orbital or periorbital cellulitis.

Patients And Methods:

It was a retrospective study including all the children aged between 1 month and 15 years treated for orbital cellulitis at the pediatric service of the Mohamed V Hospital over a period of 3 years (1st January 2016-31st December 2019).

Data collection was done using a pre-established exploitation paper with their les as background. This study consisted of the analysis of epidemic, clinical, paraclinical data, therapeutic modalities, the evolution and the complications of patients included in our study.

The statistical analysis of data was achieved using Microsoft excel 2010.

Results:

We had 24 reported cases of orbital cellulitis over a period of 3 years , The average age of patients was 6 years, with a female predominance (58%). The disease mainly involved the sinus (32%).Clinically, fever was present in 10 patients (41%),palpebral edema was universal, proptosis was noted in 5 cases(20.8%),chemosis and ptosis were noted in 4 cases(16.6%),bacteriological testing identified micro-organisms in 3 cases. Orbital computed tomography performed in 24 of the cases showed preseptal cellulitis in 14 cases (58.3%), orbital cellulitis in 3 cases(12.5%),and orbital abscess in 7 cases.

The medical treatment consisted of ceftriaxone, metronidazole and aminoside or amoxicilline clavulanic acid, corticosteroid therapy prescribed in 5 cases.

All of our patients received an intravenous antibiotic treatment for a mean period of three days for preseptal forms. When it comes to retroseptal forms it was a mean period of 8 days. All our patients received a local treatment consisting of antibiotic eye drops, and an ocular and nasal wash in case of sinusitis.

The surgical treatment that was indicated in 3 patients consisted of an orbital abscess drain.

On-treatment surveillance was carried out on the basis of general state, temperature, local signs (eyelid edema, ocular motility and visual acuity), neurological (state of consciousness, neurological defect) and biological (CRP).

All our patients had a good evolution under a medical treatment and /or surgical. No complication was noted in our study.

Table I: Summary of clinical signs according to location

Clinical sign	pre-septal cellulitis	retro septal cellulitis	total
Fever	6 (25%)	4 (16.6 %)	10 (41.6%)
Palpebral edema	14(58,3%)	10 (41.6%)	24 (100%)
chemosis	4 (16.6%)	0 (0%)	4 (16.6%)
exophtalmos	2 (8.3 %)	3(12.5%)	5 (20.8%)
Ptosis	3 (12.5%)	1 (4.1%)	4 (16.6%)
Occular mobility - **preserved** **- decreases**	14 (58.3%) 0	10 (41.6%) 0	24 (100%) 0
Purulent secretions	2 (8.3%)	4 (16.6%)	6 (25%)

Discussion:

Orbital cellulitis is a rare affection but more frequent in children than adults. Murphy, through his one year study, reported an incidence of 1.6 for 100000 children and would be responsible for 0.9 for 1000 pediatric admissions per year according to a Canadian study [1].

In the majority of the pediatric series [2–3], the mean age of children with orbital cellulitis varied between 3 and 6 years old which matched with our study. On the other hand, the frequent age group was the one under 5 years old (68.2%) which is the case for the majority of the series [2]. This affection is more frequent in boys than Page 8/14 girls with a variable sex ratio depending on the series [3, 4].

Clinically orbital cellulitis produces inflammatory edema of the eye painful and feverish onset and rapid progression [3], a decrease visual acuity, exophthalmos, chemosis, ptosis. Imagery is essential in case of suspicion of orbital cellulitis.

The CT scan will determine the exact location, size of the orbital lesion and the condition of the facial sinuses. [4.5)

Chandler's classification [6] allows us to define 5 stages:

Stage	Description
I	Inflammatory edema (preseptal cellulitis)
II	Orbital cellulitis (postseptal cellulitis)
III	Subperiosteal abscess
IV	Orbital abscess
V	Cavernous sinus thrombosis

Orbital cellulitis is a serious infection in children that can result in significant complications, including blindness, cavernous sinus thrombosis, meningitis, subdural empyema, and brain abscess.

The bacteriological assessment must include blood cultures, the rate of which of positivity does not exceed 45%.

The most common germs found are : Staphylococci, Streptococci, anaerobes and in rare situations Haemophilus influenzae,

This was also reported regarding the decrease in the incidence of pneumococcus after the introduction of anti-pneumococcal vaccination [17]. In morocco, the vaccine was introduced in 2011. No case of pneumococcus was isolated in our study

The differential diagnosis arises with orbital tumors and acute, subacute or chronic inflammation, necrotizing fascitis periorbital.

The therapeutic management of orbital cellulitis is not consensual, it is mainly based on antibiotic therapy often intravenously, drainage in the forms collected ,more or less systemic corticosteroid therapy.

In the event of uncollected pre-septal cellulitis, treatment is provided on an out patient basis. Treatment

with the combination of amoxicillin and acid clavulanic is offered with clinical monitoring of the patient at 24- 48hours.

In case of retro-septal cellulitis, the treatment requires hospitalization with institution of intravenous bi-antibiotic therapy, The duration intravenous treatment is guided by the achievement of apyrexia and the decrease in eyelid edema and occurs on average on day 5 with a oral relay with amoxicillin and clavulanic acid for at least ten days. The use of corticosteroid therapy is controversial, its addition to a effective antibiotic therapy after infection control (after 48 hours) could reduce inflammation, and decrease pressure within the orbit to protect the optic nerve [9]. Pushker and al [10] by a prospective study of 21 children with orbital cellulitis divided into 2 groups: one group receiving only intravenous antibiotic therapy and the second treated in addition by corticosteroid therapy based on prednisolone, has demonstrated the beneficial effects of corticosteroids: faster decrease in palpebral edema, chemosis and pain, reduced ptosis and short- and long-term ocular motility disorders, reduction in the duration of intravenous antibiotic therapy as well as the duration hospitalization and faster recovery of visual function.

Conclusion:

Orbital cellulitis in children is a serious infection and requires close collaboration between the ophtalmoligist ,otolaryngologist, and pediatrician in order to be diagnosed and treated early so as to improve the prognosis for vision and life.

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