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Case Report

Bilateral Orbital Tuberculosis with Unilateral Severe Irrversible Vision Loss in Children: A Case Report

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Abstract: ***Introduction:*** Tuberculosis is a transmissible infectious disease caused by mycobacterium tuberculosis. Ocular tuberculosis is rare representing between 1% to 18% of all forms of tuberculosis and only 0.3% of patients develop the orbital form. The focus is usually unilateral, we report through this observation a case of bilateral orbital tuberculosis in a 12 year old girl. ***Observation:*** A 12-year-old girl was admitted to the department of infectious and tropical diseases of the National Hospital of Zinder for long term fever and violent headache. The ophthalmological examination revealed a visual acuity of 1/10 on the right, absence of light perception on the left and bilateral exophthalmos. Biomicroscopic examination showed superficial punctate keratitis bilaterally, a normal fundus on the right and left atrophy. In view of the long-lasting fever and the biological inflammatory syndrome, the diagnosis of tuberculosis was evoked. The tuberculin intradermal test (IDR) was positive and the search for BK in the bronchial lavage revealed BAARs. HIV serology was negative. The standard chest X-ray was normal but the CT scan of the orbito- cerebral cavity showed two cystic foci with grade III exophthalmos. After 3 months of anticillary treatment the evolution was considered satisfactory. ***Conclusion:*** The orbital involvement of tuberculosis was generally unilateral, its bilateral localization is unusual. It must be systematically evoked in front of any case of bilateral exophthalmos especially in an infectious context in order to avoid irrevesible vsion loss.

Keywords: Bilateral, orbital tuberculosis, severe irreversible vision loss, Zinder, Niger.

INTRODUCTION

Tuberculosis is a communicable infectious disease caused by mycobacterium tuberculosis or Koch's bacillus, a mycobacterium belonging to the tuberculosis complex. The World Health Organization (WHO) states that tuberculosis is one of the most deadly infectious diseases in the world and estimates that one third of the world's population is infected with mycobacterium tuberculosis [1, 2]. Globally in 2019, 10 million people (25% in Africa) have contracted the disease, of which 32% are women and 12% are children under 15 years old [3]. In Niger, in 2020, only 11485 cases were reported according to WHO [4]. Ocular tuberculosis is rare, representing between 1% and 18% of all forms of tuberculosis [5-7]. Even rarer was orbital tuberculosis, as only 0.3% of TB patients develop this form [4, 5]. The infection can spread to the orbit by hematogenous route or by extension of a contiguous focus. The notion of contagion is not always found. The focus is usually unilateral [8] but we report in this case a case of bilateral orbital tuberculosis in a 12 year old girl.

OBSERVATION

A 12-year-old girl was admitted to the department of infectious and tropical diseases of the National Hospital of Zinder for long-standing fever, violent headache and bilateral exophthalmos. There was no personal or family history of tuberculosis infection. The patient had not received BCG at birth. The general

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examination revealed a lethargic patient with pale conjunctivae and mucous membranes, a fever of 38.5°C, a blood pressure of 100/70 mm Hg, a pulse of 128 beats per minute, a respiratory rate of 24 cycles per minute, and an oxygen saturation of 99% on room air. The examination of the lymph nodes revealed pretracheal and submaxillary adenopathies. On ophthalmological examination the patient presented a tragic look (fig 1A, 1B) with a visual acuity of 1/10 on the right and an absence of light perception on the left. The orbitopalpébrolacrymal examination noted an irreducible, painful, axial bilateral exophthalmos with partial ophthalmoplegia in the right eye and total ophthalmoplegia in the left eye. The orbital framework was normal on examination, no palpable mass in the lacrimal fossa. The examination of the anterior segment showed a superficial punctate keratitis bilaterally, much more pronounced on the left eye with a 360° chemosis on the same eye. The anterior chambers were of good depth, the pupils were round and centered with a much lazier photomotor reflex at left. Bilateral ocular hypertonia was noted on bidigital touch. Fundus examination was normal on the right eye and optic atrophy was found in the left eye. The biological workup showed hyperleukocytosis, a blood pressure of 100 mm at the first hour, and a CRP of 5.63 mg/ml. In view of the long-term fever and the biological inflammatory syndrome, the diagnosis of tuberculosis was evoked. The tuberculin intradermal test (IDR) was positive, the search for BK in the bronchial lavage had found BAAR. HIV serology was negative. The biological examination of the cerebrospinal fluid (CSF) and the thyroid work-up (TSH, T3, T4) did not reveal anything special. The standard chest X-ray was normal, but the CT scan of the orbit and brain in axial section through the neuro-ophthalmic plane revealed two much larger soft tissue cystic foci on the left side, which pushed the eyeballs forward, resulting in a Cabani grade III exophthalmos closer to the temporal sides without bony involvement (Figure 2A). The management consisted of the administration of artificial tear substitute, a hypotoniser and an anti-tuberculosis treatment with 3 tablets per day of RHZ (table I) (R=Rifamycin, H=Isoniazid, Z=Pyrazinamide), a treatment which will be continued for 6 months. The evolution was marked after 3 months of treatment by apyrexia, a gain of visual acuity on the right (9/10) and its maintenance in the absence of light perception on the left, a disappearance of the exophthalmos on the right and its regression on the left with the disappearance of the biological inflammatory syndrome. The control CT confirmed this regression by the disappearance of the abscess and consequently of the exophthalmos on the right (figure 2 A, red asterix) and a deterioration of the exophthalmos to grade II on the left (figure 2B, red arrow) as well as of the edema and other local inflammatory signs.

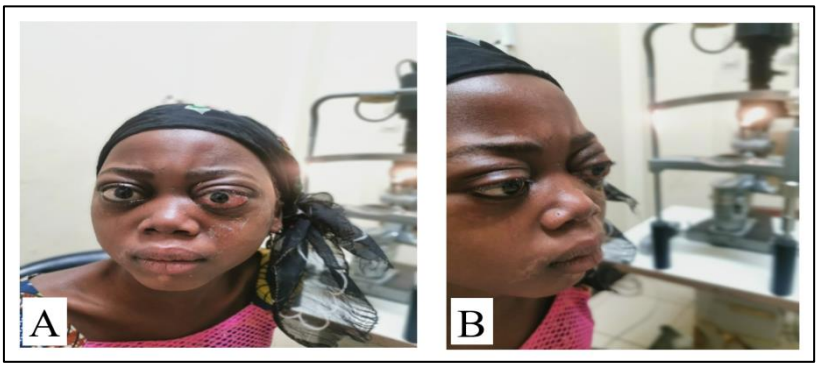

Figure 1: (A). Patient seen from the front with a tragic look, (B): ¾ view showing exophthalmos with much more pronounced chemosis on the left

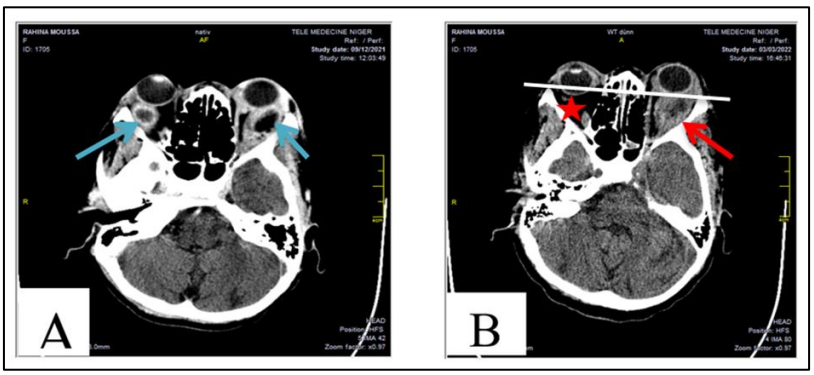

Figure 2 : (A) CT scan with bilateral orbital cystic foci (see blue arrows), (B) CT scan after 3 months of antibacillary treatment with disappearance of the abscess on the right (red star) and of the exophthalmos and regression of the focus on the left with deterioration of the exophthalmos to grade II (red arrow)

DISCUSSION

Tuberculosis has a plural clinical expression. In the eye, it can involve the eyeball, soft tissues and also the orbital bone tissue. Orbital involvement is rare and not easily diagnosed in children [9]. However, in endemic areas, tuberculosis should be suspected in the presence of any exophthalmos due to the increase in its incidence with the HIV pandemic [5]. The orbital localization is usually unilateral unlike our patient in whom the involvement was bilateral. The pathogenesis of orbital tuberculosis was staged in 5 stages, our patient being between stage II and stage III [10, 11]. As was the case with our patient, orbital tuberculosis was more common in young children, mostly females [8]. However, Yakoura *et al.*, [12] reported a case in a young male subject aged two years 6 months and Khrifi Z *et al.*, [13] in a review of the literature, reported a majority of male cases with an average age of 14 years, slightly higher than the age of our patient. Variable ages of onset had been reported by several authors ranging from 30 months to 57 [14-16]. Most patients developing ocular manifestations have no history of pulmonary tuberculosis and 50% of them have a perfectly normal chest radiograph [17] as was the case for our patient. The infection may spread directly through the orbital (sinus) walls from a contiguous site or from a distant site (pulmonary or extra-pulmonary), highlighting the hematogenous route. In particular cases, the orbital manifestation is the primium movens without any other site of involvement found. In general, the bone orbit, the eyeball and its appendages (lacrimal gland, oculomotor muscles) are likely to be affected by mycobacterium tuberculosis. Symptomatology is variable depending on the site of involvement, and a decrease in visual acuity or even blindness has been found in cases of severe ocular involvement or compression of the optic nerve by orbital apex syndrome [18]. Our patient presented a total unilateral irreversible blindness with negative light perception. The diagnosis of tuberculosis of the orbit is based on the association of the interrogation data, the clinical data but also the results of the orbital CT scan and the histological data of the tumor biopsies [19]. In the absence of any known infection in our young patient, the diagnosis was made by radiological examination associated with the tuberculin test and confirmed by biopsy culture. Retro-viral serology should also be part of this work-up because in more than 50% to 90% of extra-pulmonary tuberculosis, an association with HIV infection was noted [12, 13]. Our patient was immunocompetent. If the treatment of pulmonary tuberculosis is well codified, the treatment of extrapulmonary tuberculosis and therefore orbital tuberculosis is still controversial. However, most teams agree on a 6-month treatment regimen with an initial phase of 2 months of quadruple therapy RHZE (2 months of Rifamycin (R), Isoniaside (H), Pyrazinamide (Z) and Ethambutol (E)) followed by a 4-month maintenance phase of triple therapy RHE (4RHE) [15, 16]. With a well-conducted treatment and a good compliance to the treatment, the prognosis is favorable in case of orbital involvement but Tanawade RG *et al.*, [18] reported a case of unilateral blindness in the context of an orbital apex syndrome as in our patient's left eye despite a treatment considered correct.

CONCLUSION

Tuberculosis is a public health problem. The ocular presentation remains very little reported. The orbital involvement is generally unilateral, the bilateral localization of tuberculosis was still very reported in the literature. However, it must be systematically evoked in front of any case of bilateral exophthalmos, especially in endemic tuberculosis areas and even more so in human immunodeficiency areas. An early multidisciplinary management is a guarantee of a favorable evolution, in the event that blindness, often irreversible, could darken the picture.

DECLARATION OF LINKS OF INTEREST

The authors declare that they have no ties of interest.

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