Case report

Coinfection Tuberculosis and Borreliosis- a granulomatosis can hide another: case report

Abstract :

Uveitis is an intraocular inflammation that specifically affects the uvea. The granulomatous nature is defined by large inflammatory cell precipitates on the corneal endothelial tissue, inflammatory nodules located at the edge of the pupil, or within the iris stroma. The etiologies are as variable as they are diverse, making diagnosis difficult; they can be idiopathic or secondary to autoimmune conditions such as Vogt-Koyanagi-Harada disease or multiple sclerosis secondary to an inflammatory disease such as sarcoidosis, or to an infectious disease such as tuberculosis or Lyme disease, and sometimes secondary to the overlap of two conditions, one potentially masking the other. This article reports the case of a patient who presented with bilateral granulomatous panuveitis and for whom the etiological workup revealed two associated granulomatous conditions: tuberculosis and borreliosis.

Introduction :

Granulomatous uveitis is the inflammation of the uveal tract characterized by the formation of granulomas, which can be of infectious, inflammatory, or other origins. It can affect any part of the uvea and may be limited to the eye or associated with a potentially life-threatening systemic disease, with ocular manifestations possibly being the initial revealing signs. [1] Lyme borreliosis is a vector-borne zoonosis transmitted by tick bites; it is the most common zoonosis in the northern hemisphere and is caused by Borrelia spirochetes, with humans being only accidental hosts. Lyme disease is a prolonged infection that evolves in two phases: an early phase primarily characterized by skin involvement and a late phase with skin, joint, and neurological involvement. [6] Tuberculosis is an infection caused by a Mycobacterium and is the infectious disease with the highest mortality rate worldwide, with over 95% of deaths occurring in low- and middle-income countries where it is a common cause of granulomatous panuveitis. [5]

We report the case of bilateral granulomatous panuveitis in a patient with an etiological workup confirming both tuberculosis and borreliosis.

Case Report:

The patient is a 41-year-old woman from and residing in Casablanca, with a history of repeated stays in a village near Agadir, and no particular pathological antecedents. She experienced a progressive decline in visual acuity over 10 months, marked by the onset of stage II dyspnea

with productive cough and blood-streaked sputum, all evolving in a context of prolonged fever reaching 39.5°C and a weight loss of 30 kg in 6 months. Ophthalmological examination revealed active bilateral granulomatous panuveitis with chorioretinal foci, with visual acuity at 4/10 in the right eye and 5/10 in the left eye. Thoracic CT scan showed bilateral hilar mediastinal lymphadenopathy with a Barety compartment node and aortopulmonary window lymphadenopathy.

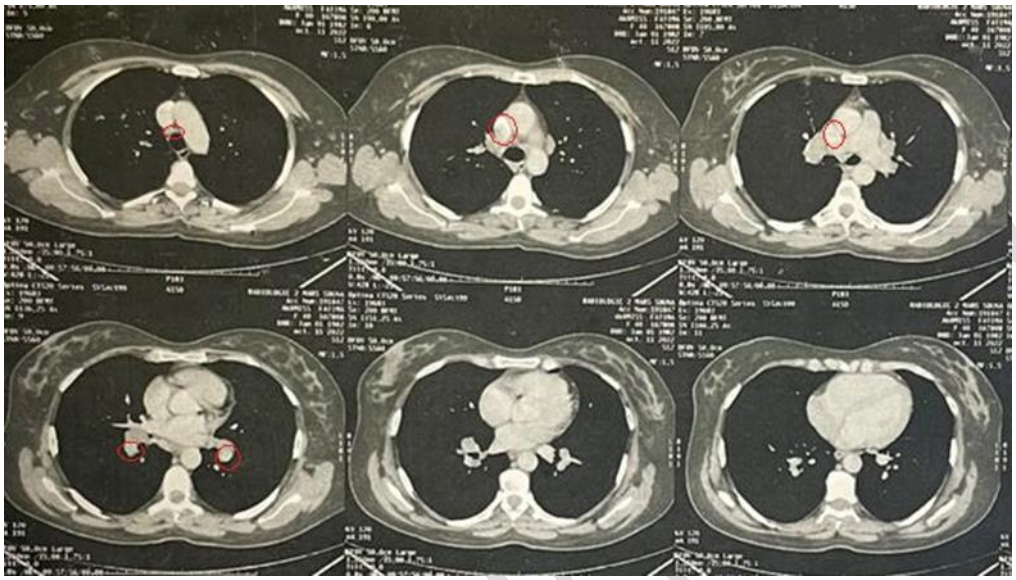


Fig 1. Thoracic CT scan of the patient showing bilateral hilar mediastinal lymphadenopathy with a Barety compartment node and aortopulmonary window lymphadenopathy

As part of the etiological workup, sputum BK (Searching for the Mycobacterium Tuberculosis in sputum) was performed, revealing the Mycobacterium on direct examination, allowing the diagnosis of tuberculosis with suspected bifocal nature. The patient was put on antitubercular drugs, with good general improvement and disappearance of the Mycobacteriums in the direct examination of the sputum after 3 weeks of treatment and with control GeneXpert in the bronchoalveolar washing fluid coming back negative, but without ophthalmological improvement, which was complicated by the onset of facial paralysis, balance disorders, hypoacusis with cacosmia, headaches with paresthesias in all four limbs, resembling electric shocks provoked by physical contact, all evolving in a context of inflammatory arthralgias. Clinical examination found a conscious patient with a GCS of 15/15, well oriented in time and space, vestibular syndrome with positive Romberg test lateralized to the right, hypoacusis, coordination disorder, paresthesias in all four limbs with abolished DTRs, and a cutaneous lymphocytoma of Lyme on the right arm.

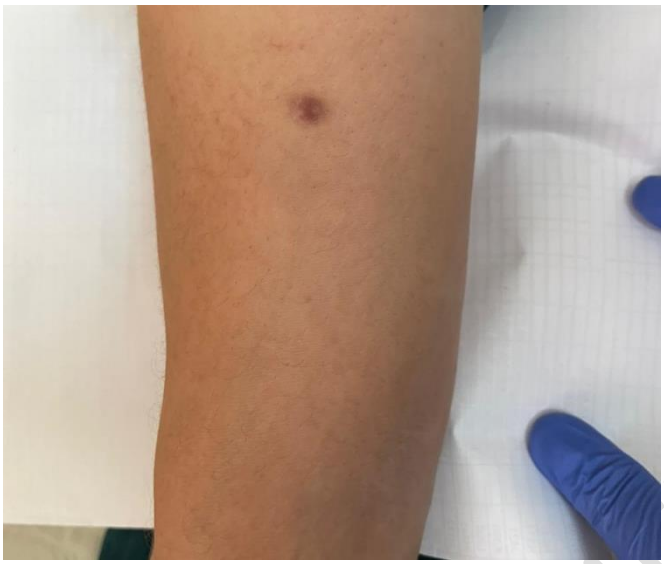
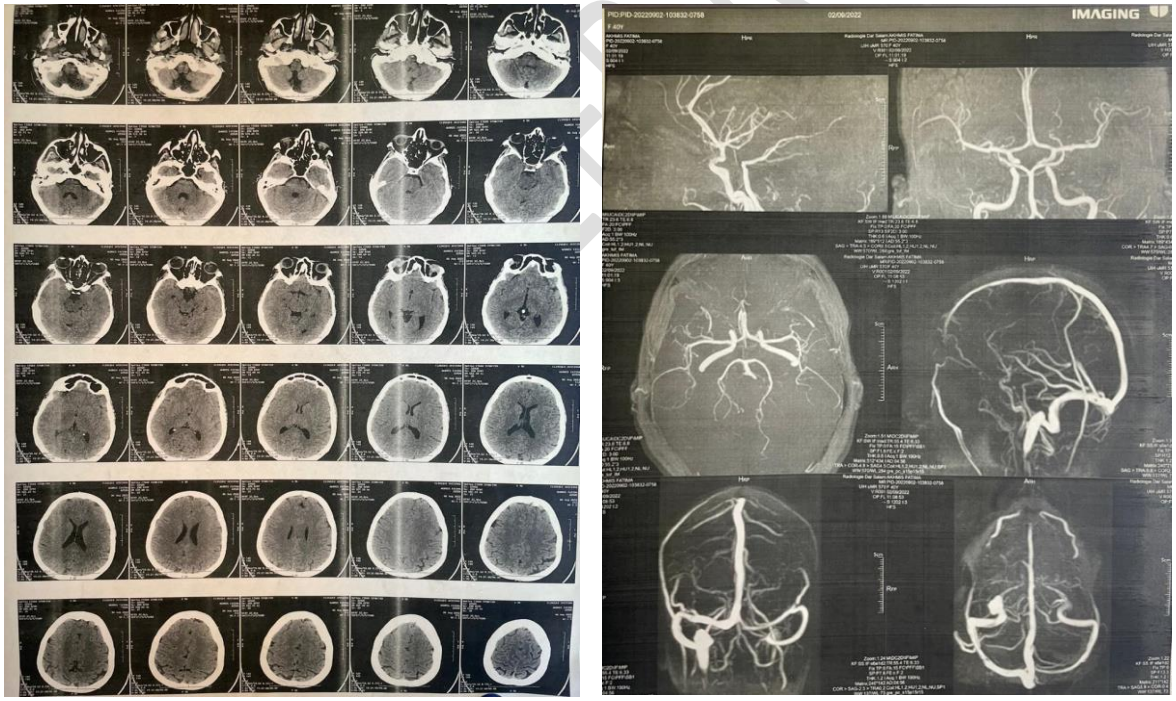


Fig 2. Lymphocytoma of Lyme on the lateral aspect of the right arm of the patient

The rest of the clinical examination was unremarkable. Lyme serology was requested and returned IgG positive, and the MRI was unremarkable.



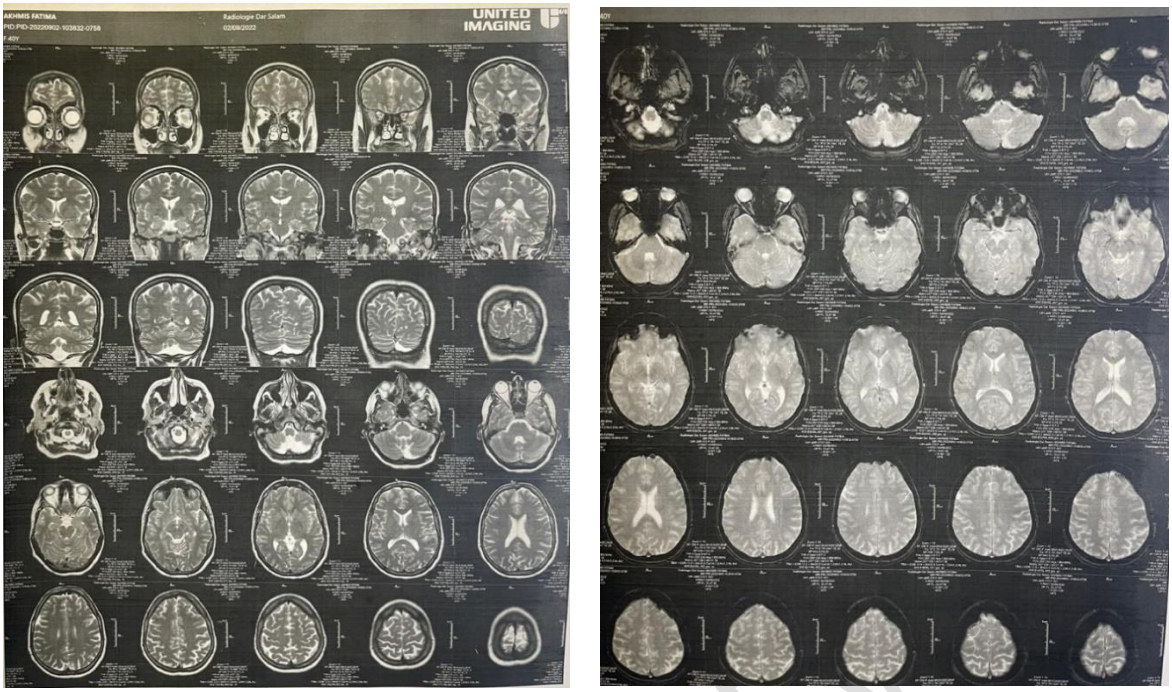


Fig 3. Cerebral MRI of the patient showing no abnormalities

CSF analysis showed normal cellularity, with a glucose-CSF/blood-glucose ratio of 0.46, increased protein levels at 0.80 g/l, with positive Lyme serology in the CSF for IgG, and audiogram showing conductive hypoacusis, with slightly elevated CRP at 28 mg/l. Therapeutically, the patient was put on doxycycline 200 mg/day in two doses with good neurological improvement, and ophthalmological control examination after 10 days of treatment showed disappearance of chorioretinal foci and improvement in visual acuity to 9/10 in the right eye and 8/10 in the left eye.

Discussion:

We report the case of a patient admitted to our department for etiological workup and specialized management of bilateral granulomatous panuveitis evolving in a context of prolonged fever, weight loss, and respiratory symptoms of productive cough with hemoptoic sputum. Being in a tuberculosis-endemic country, we initially considered bifocal tuberculosis with potential pulmonary and ocular involvement. The bacteriological workup of sputum BK finding AFB on direct examination allowed us to confirm pulmonary tuberculosis. Thoracic imaging showed mediastinal lymphadenopathy possibly due to lymph node tuberculosis, which could not be confirmed (proximity to major vascular trunks and difficult access by mediastinoscopy). However, for her ocular involvement, the patient could not benefit from anterior chamber or vitreous puncture (a procedure practiced by a few ophthalmology teams in Morocco and unavailable at Casablanca University Hospital). The patient was put on antitubercular treatment with pulmonary improvement but no ocular improvement, with additional onset of joint and central and peripheral neurological manifestations, raising the following questions:

- Was the patient compliant with the treatment?

- Could possible malabsorption be responsible for insufficient dosage?
- Could it be a form of tuberculosis resistant to first-line antitubercular drugs?
- Could the patient's tuberculosis mask another condition?

Therefore, we decided to rule out tuberculosis atypia first, conducting bacteriological research for AFB in sputum BK, which returned negative, showing that the patient was not only taking her treatment but that it was a sensitive strain to the antitubercular drugs used. We then considered another condition potentially masked by tuberculosis. We considered three main conditions: possible multiple sclerosis due to the associated neurological symptoms, Lyme disease given the infectious picture, the onset of articular and neurological symptoms consistent with the incubation period of the disease, and the presence of Lyme lymphocytoma on the patient's right arm, and lastly, possible sarcoidosis with articular and neurological involvement. Cerebral imaging and CSF cyto-chemical study allowed us to exclude sarcoidosis and multiple sclerosis, and Lyme serology returned positive in both blood and CSF. The association of tuberculosis and borreliosis was therefore retained, and the patient was put on doxycycline in addition to her antitubercular treatment with excellent clinico-biological improvement.

The lesson learned from this observation is to keep a critical mind and always show humility, questioning the already posed diagnosis and the initiated treatment. However, a question arises: should we search for all possible etiologies in the presence of granulomatous panuveitis?

Conclusion:

Uveitis is intraocular inflammation of the uvea, described as granulomatous when characterized by large inflammatory cell precipitates on the corneal endothelium, described as "mutton-fat," inflammatory nodules at the edge of the pupil described as "Koeppe nodules," or within the iris stroma described as "Busacca nodules." It can be idiopathic or secondary to autoimmune conditions such as Vogt-Koyanagi-Harada disease or multiple sclerosis, secondary to an inflammatory disease such as sarcoidosis, or to an infectious disease such as tuberculosis or Lyme disease. Lyme disease is a bacterial infection of zoonotic origin linked to Borrelia burgdorferi, transmitted by infected ticks, and its clinical polymorphism often leads to diagnostic errors. It can present with a polymorphic clinical picture with various organ involvement when it is not properly managed right after the tick bite [2,3] (cutaneous, neurological, articular, cardiac, ocular forms) and is accompanied by nonspecific general symptoms common to other granulomatous conditions such as tuberculosis and sarcoidosis. Complementary examinations are necessary for diagnosis to enable appropriate medical management. [4]

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References :

[1] Granulomatous Uveitis; Authors Ayman G. Elnahry1; Gehad A. Elnahry2. Cairo University, Faculty of Medicine

[2] Journal of Medicine and Infectious Diseases Elsevier Masson Lyme borreliosis: secondary preventive measures after tick bite Lyme disease: prophylaxis after tick bite O. Patey Department of infectious and tropical diseases, epidemiological and prophylactic studies group, CHI of Villeneuve–Saint -Georges, 94195 Villeneuve–Saint-Georges, France

[3] Journal of Pediatrics and Childcare (2020) xxx, xxx—xxx Available online at ScienceDirect www.sciencedirect.com FOCUS Prevention of Lyme disease Prevention of Lyme borreliosis N. Boulanger UR7290, early bacterial virulence: group Borrelia, Institute of Bacteriology, 3 rue Koeberlé, 67 000 Strasbourg, France

[4] The Review of Internal Medicine xxx (2018) xxx–xxx Available online on ScienceDirect www.sciencedirect.com Update News on the management of Lyme disease Insights on the management of Lyme disease D. Feyeux, B. Fantin∗ Internal medicine department, Beaujon hospital, AP–HP, 100, boulevard du Général-Leclerc, 92110 Clichy, France

[5] International Union for Tuberculosis and Lung Disease MANAGEMENT OF TUBERCULOSIS Guide to essential elements for good practice Seventh edition 2019

[6] Revue Francophone des Laboratoires, Volume 2013, Issue 457, December 2013, Pages 35-49, Bacteriology: Lyme borreliosis Lyme borreliosis; Author links open overlay panel Frédéric Schramm, Antoine Grillon, Sylvie De Martino, Benoît Jaulhac