Tuberculosis: When the key is the brain

Joana Cochicho, Emília Louro, Armando Carvalho

ABSTRACT

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CASE REPORT

A 69-year-old male, with a history of obesity and bronchiectasis, presented to Internal Medicine consultation to study abdominal adenopathies documented incidentally on abdominal ultrasound three years before. He had already been submitted to endoscopic ultrasound guided biopsy, which was inconclusive. Blood count, serum angiotensin converting enzyme, interferon-gamma release assay (IGRA) and protein electrophoresis were normal. HIV serology was negative, diabetes was excluded and the patient had no history of exposure to tuberculosis. Chest X-ray was normal. By the time of the first appointment the patient was asymptomatic but six months later he started complaining of dizziness and loss of balance. Positron emission tomography showed hypermetabolic adenopathies in multiple body compartments, including the abdomen, and a focal area on the right hemi cerebellum (Figure 1). MRI scan of brain was performed and a lesion involving the right cerebellar hemisphere and vermis with perilesional edema and mass effect was found. The biopsy revealed granulomas with central areas of necrosis (Figure 2A–B). Even though mycobacteria could not be identified in this sample or in the sputum,

Figure 1: Magnetic resonance imaging scan of brain coronal section showing the cerebellum

Figure 2: Histology (A) Aggregation of epithelioid cells forming granulomas with confluent areas of necrosis (H&E stain, x40), (B) Multinucleated giant cell (Langhans type) surrounded by lymphoplasmacytic infiltrate (H&E stain, x500).

Joana Cochicho¹, Emília Louro², Armando Carvalho³

Affiliations: ¹MD, Resident, Internal Medicine Department, Coimbra Hospital and University Centre, Coimbra, Portugal; ²MD, Attending, Internal Medicine Department, Coimbra Hospital and University Centre, Coimbra, Portugal; ³MD, PhD, Chief of Department, Coimbra Hospital and University Centre, Coimbra, Portugal.

Corresponding Author: Joana Marques Cochicho, Hospitais da Universidade de Coimbra, Praceta Prof. Mota Pinto, 3000-075 Coimbra, Portugal; Ph: +351964310409; Email: joana.cochicho@gmail.com

Received: 07 November 2015

Accepted: 14 December 2015

Published: 01 January 2016

neither by culture or nucleic acid amplification (NAA), it was decided to start the patient on multiple drug therapy for tuberculosis (isoniazid, rifampicin, pyrazinamide, and ethambutol), with improvement.

DISCUSSION

Despite the decreasing prevalence and mortality of tuberculosis, it is still a non-negligible problem across the globe and the second most deadly infectious agent in the world [1]. Extra pulmonary tuberculosis may have an indolent course and clinical manifestations vary considerably depending on the location, even when central nervous system is affected [2]. The gold standard for the diagnosis of *Mycobacterium tuberculosis* infection is culture identification. However, in extra-pulmonary tuberculosis its sensitivity ranges between 0–80%. Other methods, such as smear microscopy, NAA tests and IGRAs also have high variability [3]. Although IGRA assays have shown good results in the diagnosis of active tuberculosis in *Bacillus Calmette-Guérin* vaccinated populations, factors associated with negative results (such as age > 50 and male gender) have been identified and should be taken into account [4].

CONCLUSION

This report illustrates that the diagnosis of tuberculosis remains a challenge, not only because of its silent course but also due to the suboptimal diagnostic tests available. Although there was no identification of *Mycobacterium tuberculosis* in our patient, the exclusion of a more probable diagnosis and the risk of not treating a tuberculoma, led to the decision to start tuberculosis treatment.

Keywords: Extra pulmonary tuberculosis, Tuberculoma, IGRA assay

How to cite this article

Cochicho J, Louro E, Carvalho A. Tuberculosis: When the key is the brain. Int J Case Rep Images 2016;7(1):72–74.

doi:10.5348/ijcri-201601-CL-10094

Acknowledgements

We would like to thank Dr. Olinda Rebelo (Neuropathology Laboratory, Neurology Department, Coimbra Hospital and University Centre) for providing histologic images.

Author Contributions

Joana Cochicho – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising

it critically for important intellectual content, Final approval of the version to be published

Emília Louro – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Armando Carvalho – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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