Current Research in MRI

Case Report

A Rare Coupling: Central Tuberculous and Brucella Co-infection

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Cite this article as: Durmaz Ö, Seven Yalçın G, Devrim Binay U, Gürhan Balcı M, Çetin T, Ünver E. A rare coupling: Central tuberculous and brucella co-infection. *Current Research in MRI*, 2024;3(1):30-32.

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Received: August 10, 2023 **Revision Requested:** August 29, 2023 **Last Revision Received:** August 29, 2023 **Accepted:** September 1, 2023
Publication Date: September 29, 2023

DOI:10.5152/CurrResMRI.2023.23070

Abstract

Tuberculosis and brucellosis can imitate each other in terms of clinical and laboratory findings, but their co-infection is rarely reported. The current case report will present such an uncommon co-infection. A 56-year-old farmer was admitted with complaints of disorientation and weight loss. He was infected with both tuberculosis and brucellosis. Cervical lymph node biopsy confirmed the diagnosis of tuberculosis, and hemagglutination test verified the diagnosis of brucellosis. Although tuberculous meningitis clinic is known to have a severe course, its coexistence with brucella infection should be investigated in instances that do not respond to therapy.

Keywords: Brucellosis, infection, meningitis, tuberculosis

INTRODUCTION

Tuberculosis (TB) is one of the most prevalent and older causes of infection. It is also endemic in Turkey. Tuberculosis most commonly affects the lungs, followed by lymph nodes and pleura. Although central nervous system (CNS) involvement is uncommon (about 1%), it has a significant mortality (particularly in TB meningitis). Brucella infection (brucellosis) is a zoonotic disease prevalent in developing countries, particularly rural regions. Brucellosis and TB can imitate each other in terms of clinical and laboratory findings, but their co-infection is rarely

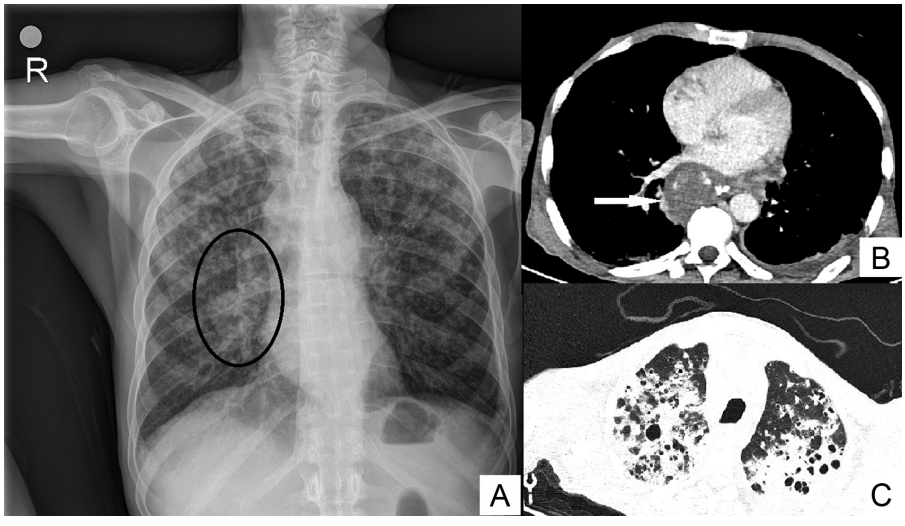

Figure 1. Reticulonodular densities at the upper and mid zones and right hilar prominency (A, circle) can be seen on chest X- ray (A). Right hilar fullness corresponds to a calcified lymph node on computerized tomography image (B, arrow). Consolidations, ground glass opacities, bronchiectasis, and cystic changes can be seen at bilateral upper lobes on computerized tomography image (C).

reported.[1,2] In the current case report, such an uncommon co-infection will be discussed.

CASE PRESENTATION

A 56-year-old farmer was admitted to our outpatient clinic after complaints of weight loss and confusion over the previous 2 weeks. In the patient's history, he had no chronic disease and had lost 15 kilograms in the previous. On physical examination, he was disoriented; body temperature was 38.6 degrees; arterial blood pressure was 120/80 mmHg; cardiac rate was 90/min; respiratory sounds were weak on auscultation; and minimal rales were present in the bilateral lung bases. Laboratory findings were: leukocytes, 17800 µL; lymphocytes, 70 µL (0.40%); neutrophils, 15530 µL (87.20%); C reactive protein (CRP), 152 mg/L; sedimentation, 92; sodium (Na), 126 mmol/L; potassium (K), 3.2 mmol/L; lactate dehydrogenase, 327 u/L. Cultures (blood, urine, and sputum) were obtained, but they came out negative, and broad-spectrum antibiotic therapy was then started. Posteroanterior chest X-ray showed reticulonodular densities in the upper and middle zones and right hilar prominency (Figure 1). Due to patient's recent cognitive impairment, a cranial magnetic resonance imaging (MRI) was performed; findings consistent with meningoencephalitis was seen in the temporoparietal region (Figure 2). Sonographically, widespread lymphadenopathy (LAP) was seen in the neck and abdomen (Figure 3). An excisional biopsy was taken from one of the posterior cervical LAPs; the histopathological diagnosis was compatible with TB (caseified granulomatous inflammation, Figure 4), and the patient was then started on antituberculosis treatment. Lumbar puncture was performed on the patient in the second week of treatment due to droopy left eyelid. The cerebrospinal fluid (CSF) analysis indicated negative acid-resistant bacilli (ARB) and culture was also negative, but 200/mm^3 leukocytes were found. Some suspicious bacillus was observed by using the Ehrlich-Ziehl-Neelsen staining method. With these findings, the patient's diagnosis of tuberculous meningitis was confirmed, and dexamethasone was added to his treatment. In the follow-up MRI, regression was identified in his previous lesions. Despite the fact that the lesions had decreased, the brucellosis test was requested because the patient's state of consciousness remained impaired. The test result was positive. Brucellosis treatment was initiated for the patient (doxycycline 100 mg 2 × 1). Following the treatment, a clinical improvement was obtained. Radiological improvement was accelerated. Improvements in the patient's laboratory results were also seen (leukocyte: 9500 µL, lymphocyte: 570 (6%) µL, neutrophil: 7530 (79.40%) µL CRP: 10 mg/L). It was decided to continue the co-infection treatment and to monitor the patient at regular intervals as an outpatient. After the patient's personal data were anonymized, he approved the sharing of his data on the related disease. Written informed consent was obtained from the patient who agreed to take part in the study.

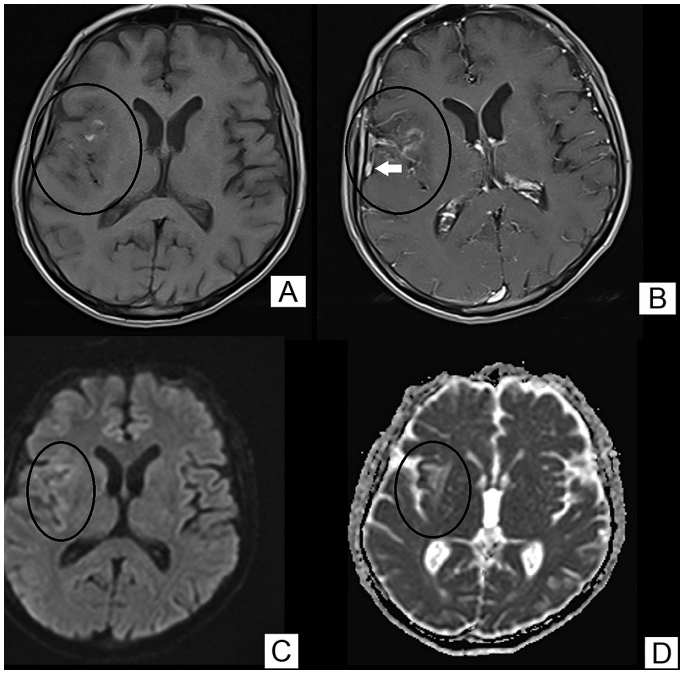

Figure 2. Gyral enhancement (A, B, circles), meningeal thickening, and enhancement (B, arrow) is present at right temporoparietal region on pre- (A) and post contrast (B) T1 weighted images. On diffusion-weighted image (C) and Apperent Diffusion Coefficient (ADC) map (D), mild gyral diffusion restriction is also present at the same level (C, D, circles).

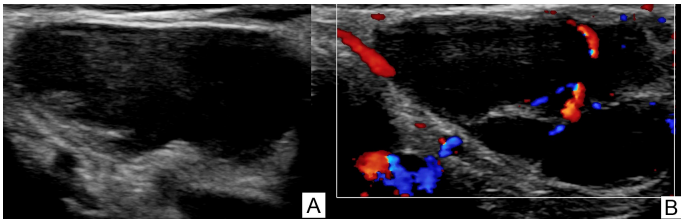

Figure 3. Cervical lymphadenopathies.(A) Both hilar and peripheral vascularization are present in the color Doppler ultrasonographic image (B).

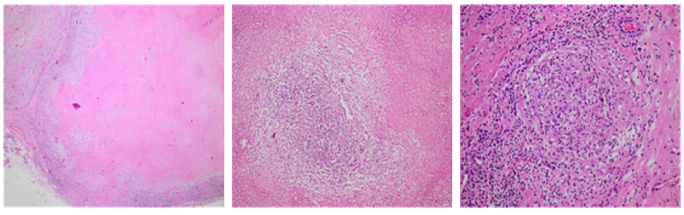

Figure 4. Specimens of pathological lymph node stained with hematoxylin-eosin and magnified calcified granulomas on thin paraffin sections at 40° magnification.

MAIN POINTS

- Tuberculosis (TB) is still the most important public health problem in developing countries.
- In order to diagnose tuberculosis, it should be kept in mind in the differential diagnosis, and clinical and laboratory findings supporting TB should be known.
- In cases that are resistant to treatment, co-infections should definitely be investigated.
- Multisystemic complications, which cause serious morbidity and mortality, develop in untreated brucella cases. This leads to worse treatment results if co-infection with TB exists.

DISCUSSION

Tuberculous meningitis is the most prevalent type of TB of the CNS. The leptomeninges are infected when a person has tuberculous

meningitis, which is the most prevalent symptom of intracranial TB. Tuberculous pachymeningitis is the name for this condition, which is less likely to affect only the dura mater. Difficulties with diagnosis and treatment lead to an increased mortality and morbidity.[3,4] The rates of ARB positivity in CSF in tuberculous meningitis ranges between 10% and 40%.[5] Similarly, ARB was negative in our case, and no growth was detected in the cultures. The diagnosis of the patient was made by clinical, laboratory, radiological, and histopathological findings. Prompt treatment for tuberculous meningitis is critical. The delay in hospitalization caused difficulties in the clinical response. Brucella is a multisystem disease like TB that can camouflage itself very well with some of its findings and can be transmitted by animal products. Sometimes even suspicion is enough to make its diagnosis. Our patient was a farmer. Once again, we understand the importance of a detailed anamnesis in diagnosing an occupational disease. The absence of clinical response despite treatment suggested the presence of co-infection. The clinical response was obtained after positive Brucella test and subsequently revised treatment.

Although TB and brucellosis are both frequent diseases in developing countries, their coexistence is uncommon. Even though it is well known that tuberculous meningitis has a severe course, the existence of co-infection should definitely be explored in cases when treatment is not effective. The benefit of early diagnosis and treatment can be seen with reduced mortality/morbidity.

Informed Consent: Written informed consent was obtained from the patient who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

Author Contributions: Conception – Ö.D., G.S.Y.; Design – Ö.D., T.Ç.; Supervision – Ö.D., E.Ü.; Materials – Ö.D., T.Ç., M.G.B.; Data Collection and/or Processing – Ö.D., M.G.B., T.Ç.; Analysis and/or Interpretation – Ö.D., M.G.B., E.Ü.; Literature Review – Ö.D., G.S.Y.; Writing Manuscript – Ö.D., G.S.Y., U.D.B.; Critical Review – Ö.D., U.D.B.

Declaration of Interests: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study has received no financial support.

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