

Surprising Result in A Patient Presenting with Agitation: Neurobrucellosis

Ajitasyon ile Başvuran Hastada Şaşırtıcı Sonuç: Nörobruselloz



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ABSTRACT

Brucellosis is one of the most common zoonotic diseases worldwide. Neurobrucellosis develops within approximately 12 months after the diagnosis of brucellosis. Since the classical triad of meningitis (fever, nuchal rigidity, confusion) is rare in cases of meningitis due to brucellosis, brucellosis should be considered in the differential diagnosis of patients with unexplained neurological findings in endemic areas. In our case, a 31-year-old male patient with no history of chronic disease in his medical history was admitted to the emergency department with agitation, confusion, meaningless movements, unsteadiness in walking and blurred vision which started on the same day. In his anamnesis, it was learned that he had been treated for brucella 8 months ago in an external centre, but he did not continue his treatment regularly and did not attend the follow-up visits. LP revealed microprotein 255 mg/dL and albumin 114 mg/dL. CSF brucella agglutination was positive at a titre of 1/40. The patient was transferred to the intensive care unit with a diagnosis of neurobrucellosis. In this case report, we aimed to ensure that neurobrucellosis should be considered as a differential diagnosis in patients presenting with neurological and psychiatric symptoms, especially in regions where animal husbandry is practised. We believe that with this case report, we will contribute to a subject that does not have many examples in the literature and that we will be able to create different perspectives on patients with atypical symptoms.

ÖZET

Bruselloz dünya çapında görülen en yaygın zoonotik hastalıklardandır. Nörobruselloz, brusella tanısı alındıktan sonra yaklaşık 12 ay içerisinde ortaya çıkar. Bruselloza bağlı menenjit olgularında, menenjitin klasik triadı (ateş, ense sertliği, bilinç bulanıklığı) nadir görüldüğünden, endemik bölgelerde açıklanmayan nörolojik bulguları olan hastaların ayırıcı tanısında bruselloz mutlaka düşünülmalıdır. Olgumuzda; tıbbi geçmişinde kronik hastalık öyküsü bulunmayan 31 yaşında bir erkek hasta, aynı gün başlayan ajitasyon, bilinç bulanıklığı, anlamsız hareketler, yürümede dengesizlik, görmede bulanıklık ile acil servise müracaat etti. Anamnezinde 8 ay önce dış merkezde brucella tedavisi gördüğü ancak tedavisine düzenli devam etmediği ve takiplerine gitmediği öğrenildi. LP sonucunda mikroprotein 255 mg/dL ve albümin 114 mg/dL saptandı. BOS brucella aglütinasyonu 1/40 titrede pozitif geldi. Hasta nörobruselloz tanısı ile yoğun bakım ünitesine devredildi. Bu olgu sunumunda özellikle hayvancılıkla uğraşılacak bölgelerde nörolojik ve psikiyatrik semptomlarla gelen hastalarda nörobrusellozun ayırıcı tanısı olarak düşünülmesini sağlamak amacıyla yazıldı. Bu olgu sunumu ile literatürde çok fazla örneği olmayan bir konuya katkı sağlayacağımızı ve atipik semptomlar barındıran hastalarda farklı bakış açıları oluşturabileceğimizi düşünmekteyiz.

Keywords:

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Anahtar Kelimeler:

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INTRODUCTION

Brucellosis is one of the most common zoonotic diseases seen worldwide (1). The most common route of transmission is direct contact with infected animals and consumption of dairy products such as fresh milk, butter and cheese (2). Brucella is a Gram (-), intracellular, aerobic bacterium and Brucella abortus, B. melitensis, B. suis and B. canis cause brucella infection in humans (2). Brucellosis is an infection that may involve multiple systems including spleen, liver, central nervous system, musculoskeletal system, lymphatic system and gastrointestinal system and requires a multiple approach (2). Although rare, nervous system

involvement due to Brucella infection can be observed in endemic regions (1). The definition of neurobrucellosis is the name given to neurological involvement of brucella infection and is observed in approximately 5% of patients with brucella infection (3). Neurobrucellosis occurs within approximately 12 months after the diagnosis of brucella (2). Clinically, it presents with different neurological presentations and may be seen as myelitis, encephalitis, abscess, meningitis, demyelination, cranial neuropathy, intracranial hypertension, meningovascular syndrome and psychiatric symptoms (2,3). The fact that neurobrucellosis is not a common diagnosis in clinical practice led us to

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prepare a case report on this subject. With this case report, we aimed to establish an additional preliminary diagnosis, along with other possible causes, in patients presenting to the emergency department with neurological symptoms, especially in endemic regions.

CASE REPORT

A 31-year-old male patient with no history of chronic disease was brought to the emergency department with agitation, confusion, meaningless movements, unsteadiness in walking and blurred vision which started on the same day. In his anamnesis, it was learned that he had been treated for brucella 8 months ago in an external centre, but he did not continue his treatment regularly and did not attend the follow-up visits. On physical examination, pulse rate was 106/min and temperature was 36.6 °C. Neurological examination revealed no acute pathological findings except nuchal rigidity and other system examinations revealed no pathological findings. ECG was in normal sinus rhythm. Blood parameters were WBC:13.72 10³/μL, NE: 11.7 10³/μL, CRP: 0.4 mg/L, procalcitonin: 0.06 μg/L. No ethanol was detected in the blood. The patient was sedated with benzodiazepine for imaging. Brain CT (Computed Tomography) revealed a hypodense lobulated lesion (cyst?) adjacent to the 3rd ventricle. Diffusion MRI (Magnetic Resonance Imaging) revealed no pathology. Lumbar puncture was planned. Microprotein 255 mg/dL and albumin 114 mg/dL were found in LP (Lumbar Puncture). CSF (Cerebrospinal Fluid) brucella agglutination was positive at a titre of 1/40. (Table I) Pleocytosis with lymphocyte dominance was present. During the emergency department follow-up, 2 grams of 3rd generation cephalosporin was administered intravenously. The patient was consulted with the infectious diseases department with a preliminary diagnosis of neurobrucellosis. Considering his current findings, he was transferred to the intensive care unit for follow-up and treatment. Doxycycline, rifampicin and ceftriaxone combined treatment was started. During intensive care unit follow-up, the patient described low back and hip pain and was evaluated with thoracolumbar and sacroiliac MRI and the results were significant for brucella sacroiliitis. On the 16th day of follow-up, the patient with no active complaints and neurological symptoms was discharged with oral doxycycline and rifampicin prescription.

DISCUSSION

In this case report, lumbar puncture was performed in a patient who presented with altered consciousness and microprotein was found to be high in CSF tests. There was also pleocytosis with a predominance of lymphocytes. It is a current case report that supports the existing literature by obtaining similar results to the findings in the literature. Nervous system involvement is a rare complication of brucellosis, occurring in 3-10% of patients with brucellosis. Despite this, neurobrucellosis is reported to be relatively common in countries where brucellosis is endemic. It is estimated that neurobrucellosis constitutes 0.5% of all episodes of community-acquired central nervous system infections (1). Neurobrucellosis is most commonly diagnosed 2-12 months after the onset of symptoms. Our case, similarly, symptoms appeared approximately 8 months after diagnosis. Since neurological complications

Table 1: Blood and CSF results

Parameters	Results
Blood results	
WBC	13.72 10 ³ /μL
NEU	11.7 10 ³ /μL
CRP	0.4 mg/L
Procalcitonin	0.06 μg/L
Ethanol	(-)
CSF results	
Microprotein	255 mg/dL
Albumin	114 mg/dL

may develop chronically, they are frequently confused with other infections such as tuberculosis (2). Variable neurological pictures may include meningitis, encephalitis, myelitis-radiculoneuritis, brain abscess, epidural abscess, granuloma and demyelination. While subacute or chronic meningitis is most common in neurobrucellosis, classical meningitis findings may not be seen. In patients with unexplained neurological findings, especially in endemic areas, the possibility of brucellosis should not be ruled out and should be included in the differential diagnosis. Neurological examination of patients frequently reveals partial loss of strength, nuchal rigidity, cranial neuropathy and confusion (3). Psychiatric pictures including depression, amnesia, psychosis, agitation, personality change and euphoria may be observed in the course of neurobrucellosis (4). In CSF examinations of neurobrucellosis patients, lymphocytic cell dominance and moderate protein increase are observed (3). In the CSF examinations of our patient, findings compatible with the literature were found. Antibiotic selection, dosage and duration of antibacterial treatment for neurobrucellosis are still controversial and a combination of three or four antibiotics is usually used until clinical symptoms improve and cerebrospinal fluid normalises. Currently, the treatment plan is usually based on the use of rifampicin, ceftriaxone or quinolone in combination with doxycycline and one of the aminoglycosides. Doxycycline, rifampicin and ceftriaxone were administered to our patient during follow-up. In a study published by Zhuang et al. on 21 patients, minocycline (100 mg, twice a day) was added to the treatment, unlike our case, but similar results were obtained (5). The average duration of treatment in the literature is 6 months. However, it varies between 3 and 9 months depending on clinical symptoms (4). Due to the possibility of recurrence, it is recommended to follow up the patients every 3 months. Brucellosis should be considered as a potential cause of cervical epidural abscess, especially in endemic areas. Timely detection and effective management of this condition are crucial in order to minimize the associated morbidity and mortality. For patients with detectable brucellar cervical epidural abscess, we recommend decompression and fusion surgery (6). The prognosis of neurobrucellosis varies according to clinical symptoms. It has been concluded that patients presenting with meningitis generally have a good prognosis, whereas patients involving the brain

parenchyma and spinal cord often have severe sequelae (7). It is thought that the elevation of free oxygen radicals and a decrease in antioxidant capacity may have an importance in the pathogenesis of brucellosis. In a study by Caylak E, the therapeutic power of antibiotic combinations used in patients was determined by the oxidant and antioxidant agents measured before and after treatment in patients, and the addition of antioxidants to effective treatment protocols for brucella will make an extra contribution (8). Optogenetics is a technology that combines genetic and optical methods to regulate cellular processes with light signals. Cell behavior is affected by the change in shape of genetically encoded proteins in the presence of light. This method is a candidate for use in the treatment of neurobrucellosis in the near future. In a study by G Li et al., melatonin (5 mg/kg), which plays a critical role in mammalian immune regulation, was injected intravenously into three adult sheep with brucellosis. Blood samples were collected at 0, 1, 3 and 6 h after injection for cytokine analysis. IL-2, IL-4, IL-6, IL-10, IFN- γ and TNF- α levels were evaluated (9). Melatonin is recognized for its ability to mitigate the harmful consequences of free radicals through the activation of antioxidant enzymes. Melatonin demonstrates diverse antioxidant properties, including the neutralization of free radicals, suppression of free radical generation in neurons, astrocytes, and microglia, and regulation of antioxidant enzymes (10). In this study, the

proinflammatory cytokines IFN- γ , IL-2 and IL-6 levels of sheep with brucellosis were significantly decreased at different times after exogenous melatonin treatment, suggesting that melatonin alleviates inflammation caused by brucellosis infection to some extent. The level of IL-4, an anti-inflammatory cytokine, was significantly up-regulated 1 h after melatonin treatment, indicating that melatonin plays an important role in anti-inflammatory activity. Various studies have shown anti-inflammatory effects of melatonin treatment in both animals and patients. It can be predicted that melatonin treatment may alleviate brucellosis by modulating inflammatory cytokine responses. The use of melatonin as a therapeutic or adjuvant treatment for brucellosis in both animals and humans may find a place in the future (9).

CONCLUSION

In patients presenting to the emergency department with similar symptoms, neurobrucellosis, which is one of the central nervous system infections, should be considered in the differential diagnosis after central pathologies are excluded and toxic substance and ethanol intake is excluded. It should definitely be considered in the differential diagnosis in patients presenting with such symptoms, especially in endemic regions, as in our country.

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