



Laboratory-Acquired Brucellosis: A Case Report

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Abstract

Brucellosis, a common zoonotic disease, is still endemic in Turkey. The most common transmission is through consumption of milk and dairy products. Distinctively, in laboratory workers, both direct inhalation and contact with contaminated laboratory material may cause infections. In this case report, a 42 years male laboratory staff who had fatigue, night sweats, and arthralgia especially at knees and hip joints for 10 days, was evaluated. He did not have any history of dairy product consumption. But we learnt that he had sniffed a culture plaque with *Brucella spp* while working on the sample. We detected *Brucella melitensis* in his blood culture. We present this case to remind readers of the high transmission risk of brucellosis.

Key Words: Brucellosis; Laboratory Acquiring; Smelling.

Laboratuvar Kaynaklı Bruselloz: Bir Olgu Sunumu

Özet

Dünyada yaygın olarak görülen zoonozlardan biri olan bruselloz ülkemizde halen endemiktir. En sık geçiş enfekte süt ve süt ürünlerinin tüketilmesi ile olmaktadır. Farklı olarak laboratuvar çalışanlarında hem direk inhalasyon hemde hasarlı derinin enfekte materyallere teması sonucu bulaş olabilmektedir. Mikrobiyoloji teknisyeni olan 42 yaşındaki erkek olgumuzda, yaklaşık 10 gündür başlayan, özellikle diz ve kalça eklemünde belirgin eklem ağrısı, halsizlik ve gece terlemesi mevcuttu. Pastörize edilmemiş süt ve süt ürünü tüketim öyküsü bulunmayan hastanın sonrasında *Brucella spp.* üremesi saptanmış bir kültür plağına dokunma ve koklama öyküsü mevcuttu. Hastanın alınan kan kültüründe de *Brucella melitensis* üremesi saptandı. Brusellozda yüksek laboratuvar geçiş riskini hatırlatmak amacı ile bu olguyu sunmaktayız.

Anahtar Kelimeler: Bruselloz; Laboratuvar geçişi; Koklama.

INTRODUCTION

Brucellosis, a common zoonosis in the world, still appears to be an endemic disease in the Mediterranean and Middle-Eastern countries, including Turkey (1,2). The *Brucella* species, which are the causative agents of the disease, are Gram-negative coccobacilli (2).

This disease is most commonly transmitted by consuming infected milk and milk products or through direct contact with infected animals. Infection may also take place for laboratory workers when they are exposed to direct inhalation or if the damaged skin gets in contact with infected materials. In addition, brucellosis is one of the most common causes of infections due to laboratory-induced transmission (3). Laboratory-induced transmission is known to have occurred both in endemic and non-endemic countries (3-9). In this case, we aimed to remind readers of brucellosis as an ongoing endemic disease in Turkey with the risk of transmission at laboratories.

CASE REPORT

The 42-year-old male microbiology technician was admitted to our clinic with complaints of evident pain in the hip and knees, night sweats, and fatigue that had

been going on for approximately 10 days. There were no signs of unpasteurized milk and dairy product consumption in the patient's history but he related that he was working on a bacteria identification test on a culture plate with *Brucella spp.* and accidentally sniffed the plate. Physical examination showed tenderness in the hips and knee joints of the patient. Other physical examination findings were normal. In the following tests, we detected brucella tube agglutination 1/320.

In consideration of his complaints of extensive joint pain and difficulty in walking, the patient was hospitalised. Streptomycin (1 g/day) and doxycycline (100 mg, twice a day) were started. The blood culture in the admission showed *Brucella melitensis* growth. Magnetic resonance imaging of the knees, sacroiliac, and the thoracolumbar disclosed no pathologies. Having his complaints dropped in the second week of the treatment and his control blood cultures negative, and patient was discharged to be monitored in follow-ups. At the end of six weeks, his complaints resolved completely.

DISCUSSION

In their line of work, laboratory workers can be exposed to various infectious agents like *Brucella spp.* Besides brucellosis itself is one of the most common infections associated with laboratory work (3). Laboratory-originated

infection incidence rate of brucellosis is reported to be 2% (4). A recent study by S.Sayın-Kutlu conducted on 667 laboratory workers in Turkey et al. reveals that the laboratory associated brucellosis rate was 5.8% (5). Again, with a risk ratio of 11,9%, Bouza et al.'s study shows that the risk of brucellosis for laboratory workers is higher than it is for the general population (3).

S.Sayın-Kutlu et al.'s study presents the laboratory associated risk factors for brucellosis as being involved with brucella bacteria, lack of biosecurity cabin and biosafety, and male gender (5). In our case, parallel to the literature, the patient was a male and worked on the plaque outside the biosafety cabinet. The fact that there was no history of unpasteurized milk and milk products consumption or a traumatic history of contact with infected animals made us consider the patient as a brucellosis case. The use of the biosafety cabinet is known to be an important preventive measure in the literature (3,6). In a recent study reported in Israel, it has been observed that, although they worked on blood cultures with brucellosis, no laboratory personnel had brucellosis because all laboratory operations were carried out in the biosafety cabinet (6). In our hospital, we provide regular training for laboratory workers about safety precautions such as the use of gloves, masks, and biosafety cabinets.

Another frequent risk factor is the practical mistake of smelling culture plates (7). *Brucella* spp. is highly infectious because even 10 to 100 bacteria in a single aerosol can cause bacterial infection (8). As it is widespread in Turkey, in our laboratory, too, smelling or sniffing culture plates is a common practice. Similarly, our patient also had a history of sniffing the plaque with risk factor. Exercising this practice poses great risks in cases where reproduction is possible especially in Turkey where brucellosis is an endemic disease. In countries like the United States where brucellosis is rarely seen, laboratory staff may not mind the possibility of the risk factors about the disease; still, in such questionable cases, clinicians are recommended to warn the staff in

the laboratory (9). However, in Turkey, where brucella is an endemic disease, it is not always possible in practice to report every suspected case to the laboratory. In addition, blood culture growth can also be detected in unsuspecting cases.

In conclusion, laboratory staff are recommended to be tactful about the implementation of security measures by considering kinds of bacteria which carry high transmission risks like *Brucella* spp. As a cautionary example, we believe that our case will lead to consideration of such cases.

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Received/Başvuru: 29.10.2013, Accepted/Kabul: 09.12.2013

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For citing/Atıf için

Toplu SA, Yıldız F. Laboratory-acquired brucellosis: a case report. *J Turgut Ozal Med Cent* 2014;21:235-6 DOI: 10.7247/jtomc.2013.1181