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A Case with Microbiologically Confirmed Lepromatous Leprosy from Mersin, Türkiye

Mikrobiyolojik Olarak Doğrulanmış Lepromatöz Lepralı Bir Olgu, Mersin, Türkiye

Taylan BOZOK[1](İD), Tamer İrfan KAYA[2](İD), Yasemin YUYUCU KARABULUT[3](İD), Mehmet Burak Yavuz ÇİMEN[4](İD), Gönül ASLAN[1](İD)

[1] Department of Medical Microbiology, Mersin University Faculty of Medicine, Mersin, Türkiye
[2] Department of Dermatology, Mersin University Faculty of Medicine, Mersin, Türkiye
[3] Department of Medical Pathology, Mersin University Faculty of Medicine, Mersin, Türkiye
[4] Department of Medical Biochemistry, Mersin University Faculty of Medicine, Mersin, Türkiye

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ABSTRACT

Leprosy, a chronic infectious disease caused by Mycobacterium leprae bacillus, causes damage especially to the skin, upper respiratory tract mucosa and peripheral nerves. In order to prevent the spread of leprosy, which has an effective treatment, it is essential to promptly identify and accurately diagnose cases in the early stages. In this article, we present a patient with lepromatous leprosy who applied to the dermatology outpatient clinic in a non-endemic region. The diagnosis was confirmed through the detection of acid-fast bacilli in the patient's skin biopsies and the identification of the M. leprae complex using molecular methods. This disease, characterized by non-specific skin lesions in the early stages, should be considered by all clinicians as a potential differential diagnosis. Furthermore, adopting a multidisciplinary approach can greatly facilitate the diagnosis process.

Key Words: *Mycobacterium leprae, Leprosy, Non-endemic region*

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ÖZ

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Taylan BOZOK[1], Tamer İrfan KAYA[2], Yasemin YUYUCU KARABULUT[3], Mehmet Burak Yavuz ÇİMEN[4], Gönül ASLAN[1]

[1] Mersin Üniversitesi Tıp Fakültesi, Tıbbi Mikrobiyoloji Anabilim Dalı, Mersin, Türkiye
[2] Mersin Üniversitesi Tıp Fakültesi, Dermatoloji, Mersin, Türkiye
[3] Mersin Üniversitesi Tıp Fakültesi, Tıbbi Patoloji, Mersin, Türkiye
[4] Mersin Üniversitesi Tıp Fakültesi, Tıbbi Biyokimya, Mersin, Türkiye

Mycobacterium leprae basilinin neden olduğu kronik bir infeksiyon hastalığı olan lepra, özellikle deride, üst solunum yolları mukozasında ve periferik sinirlerde harabiyete yol açmaktadır. Etkili bir tedavisi olan lepranın yayılımının önlenmesi için vakalara erken dönemde ulaşılabilmesi ve doğru tanımlanması şarttır. Bu yazıda endemik olmayan bir bölgede dermatoloji polikliniğine başvurmuş lepromatöz lepralı bir hastayı sunuyoruz. Hastanın cilt biyopsilerinden aside dirençli basillerin görülmesi ve moleküler yöntemle M. leprae kompleks tespit edilmesi ile tanısı kesinleştirilmiştir. Erken dönemde spesifik olmayan cilt lezyonları ile seyreden bu hastalığın tüm klinisyenler tarafından ayırıcı tanıda mutlaka akılda tutulması gerekmektedir. Ayrıca multidisipliner bir yaklaşım tanıyı oldukça kolaylaştıracaktır.

Anahtar Kelimeler: *Mycobacterium leprae, Lepra, Nonendemik bölge*

INTRODUCTION

First described by Gerhard Armuer Hansen in 1873 and also known as "Hansen's disease", leprosy is a chronic infectious disease caused by *Mycobacterium leprae* bacillus[1]. In 2020, 127.558 new cases of leprosy were reported worldwide. There has been a gradual decrease in the number of new cases over the years. No cases of leprosy were reported in 45 countries in 2019[2]. In Türkiye, leprosy is within the scope of notifiable infectious diseases and the prevalence of the disease is reported to be less than one case in 100.000 by local health authorities[3]. Leprosy usually affects the skin, upper respiratory mucosa and peripheral nerves. Due to the neuropathic changes that occur in the later stages, the disease can lead to irreversible pathologies involving the eyes, hands and feet[2]. Early diagnosis and treatment are very important to minimize these problems. There is an effective treatment for leprosy and a multidrug regimen (MDT) (rifampicin, dapsone and clofazimine) is recommended[4]. Accurate classification of leprosy cases is critical for effective treatment. According to the Ridley-Jopling classification, the absence of bacilli or the presence of very few bacilli in smears from the lesions corresponds to tuberculoid or paucibacillary leprosy. On the other hand, the presence of multiple symmetrical skin lesions, nodules, plaques, thickened dermis, and a high number of bacilli in smears characterizes lepromatous or multibacillary leprosy[5]. Six months of treatment is recommended for paucibacillary leprosy and 12 months for multibacillary leprosy[6]. In this article, we present a case diagnosed as lepromatous leprosy.

CASE REPORT

A 36-year-old female patient was admitted to Mersin University Hospital Dermatology Outpatient Clinic due to long-standing lesions on her face, arms and legs. The patient also reported recent eyebrow and eyelash shedding. The patient did not describe any additional diseases and symptoms. During the physical examination, the patient's vital signs were found to be normal. Papular lesions were observed on the face and extremities, accompanied by a noticeable decrease in eyebrows and eyelashes (Figure 1). No abnormality was observed in the routine hematological and biochemical examinations of the patient. In addition, according to the results of peripheral blood flow cytometry analysis performed to evaluate the immune status, 65% CD3, 46% CD4, 19% CD8 and 20% CD19, 23% CD20 and 10% CD16 positive cells were found in the gated lymphocyte population. Dur-

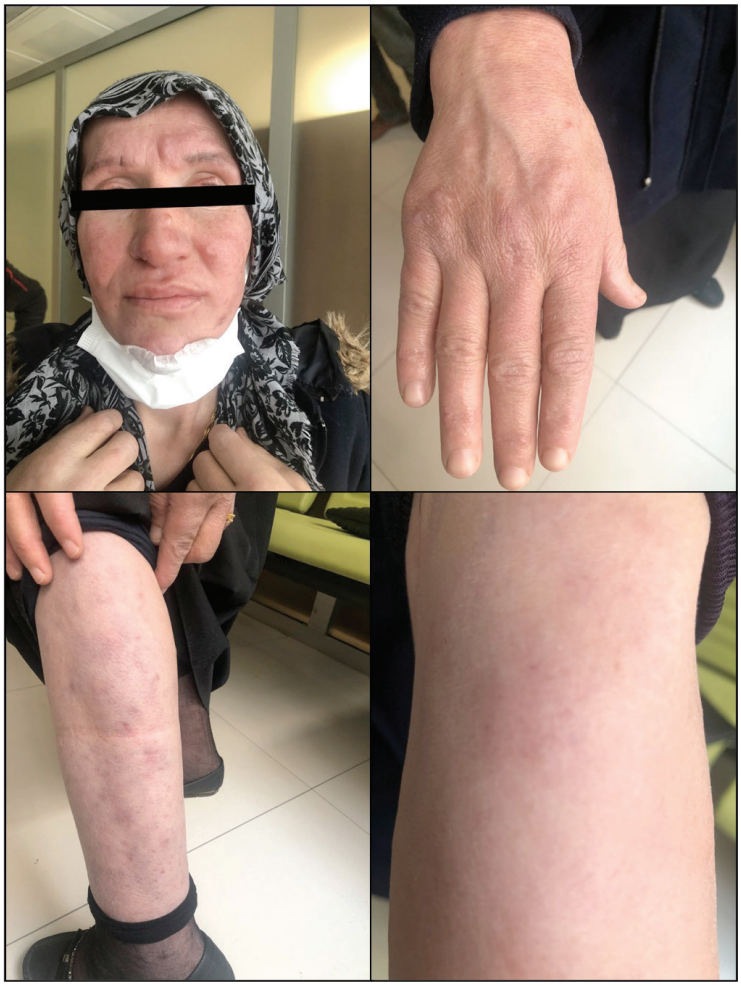

Figure 1. Papullar lesions observed on the face, back of the hand, legs and arms and shedding in the eyebrows and eyelashes on the face.

ing the evaluation, it was determined that the CD4/CD8 ratio was 2.39. With the preliminary diagnosis of sarcoidosis, lymphoma, leprosy and granuloma faciale, a biopsy was recommended from the patient's lesions. Two incisional skin biopsies, one with a diameter of 7x3 mm and a depth of 4 mm, and the other with a diameter of 8x5 mm and a depth of 4 mm, were taken from the face and forearm. The pathology report indicated a diagnosis of "diffuse dermal histiocyte proliferation." Lepromatous leprosy was primarily considered based on the histiocyte infiltration pattern observed in the biopsy samples, with no evidence of sarcoidosis or lymphoma. The report recommended further microbiological examination (Figure 2). In the microbiology laboratory, skin biopsy samples were processed by homogenization-decontamination-concentration method and smears were prepared and stained with Ehrlich-Ziehl-Neilsen. When the samples stained under the light microscope were examined, acid-resistant bacilli (ARB) were observed (Figure 3). In addition, samples were inoculated on Löwenstein-Jensen and Mycobacteria Growth Indicator Tube (MGIT, Becton Dickinson, USA) media. Cultures were incubated at 37°C for at least six weeks. Patient samples were molecularly analyzed for *Mycobacterium leprae* complex using the GenoType LepraeDR test (Hain Lifescience, Nehren, Germany) using the Line Probe Assay (LPA) method[7]. *M. leprae* complex was detected as a result of analysis with LPA from the samples of the patient whose cultures did not show any growth. In addition, no mutations were

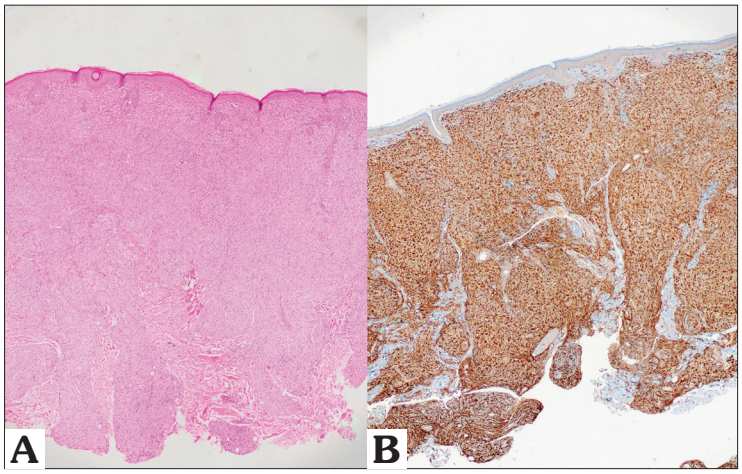

Figure 2. A. Diffuse histiocyte infiltration is observed in the dermis, some of which have spindle morphology (H&E; X40), **B.** (CD68; X40).

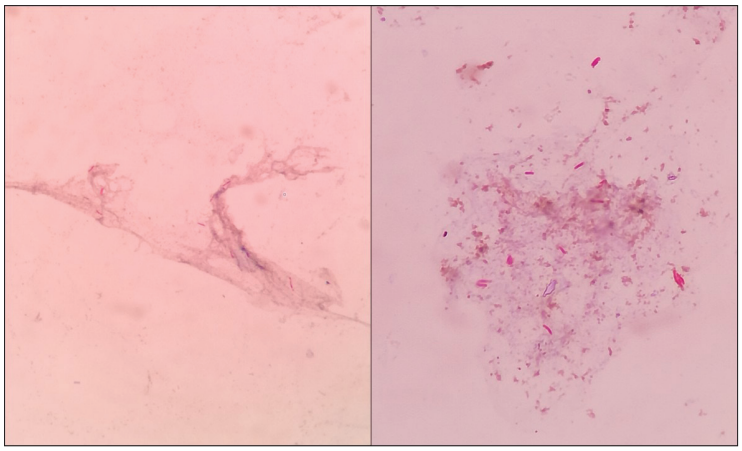

Figure 3. Appearance of ARB bacilli in different areas after staining from processed biopsy material (EZN; X1000).

found in the gene regions associated with drug resistance with the LPA test (Figure 4). The patient was diagnosed with lepromatous leprosy and MDT treatment was started. In the follow-ups, the general condition of the patient was stable, and her treatment was continued.

DISCUSSION

Leprosy continues to be a worldwide public health problem in the 21st century. Strategies initiated by WHO to eradicate leprosy have significantly reduced the number of cases[2]. However, endemic cases continue to be seen in regions with low socioeconomic status[8]. Cases seen in developed countries are generally considered to be imported cases[9]. Türkiye is located in a region that has been exposed to waves of immigration due to internal turmoil and wars in neighboring countries. Inadequate living conditions of refugees and crowded environments may cause an increase in diseases transmitted by long-term close contact, such as leprosy. In Türkiye, Dertlioğlu et al. Nine patients with lepromatous leprosy who had COVID-19 infection were examined in a study he conducted. All patients between the ages of 65 and 95, the majority of whom had comorbidities, were discharged after making a recovery[10]. Again, in a case report of suspected leprosy cases by Torun and Kahraman in Türkiye, a 53-year-old patient who was followed up in the chest diseases service with the diagnosis of pleural effusion and pneumonia died due to septic shock and multiple organ failure. Although the

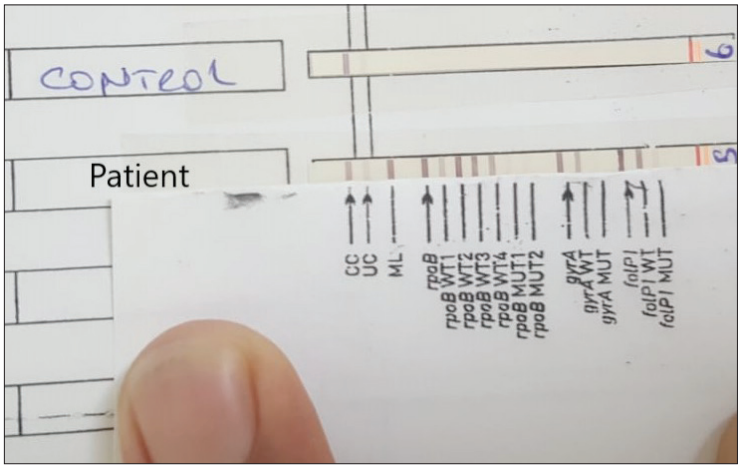

Figure 4. Investigation of mutations in resistance-related genes and samples with positive results for *Mycobacterium leprae* complex by LPA method (GenoType LepraeDR test; Hain Lifescience, Nehren, Germany).

skin biopsy taken from the patient's subcutaneous nodules was nonspecific, they reported that the lesions and clinical picture were compatible with lepromatous leprosy[11]. In a case presented by İnanır et al., a patient who had been diagnosed with eczema and underwent multiple topical and systemic steroid treatments for two years was found to have granulomatous lesions characterized by increased lymphocytes and histiocytes. Furthermore, ARB positivity was observed in the skin biopsy, leading to the diagnosis of leprosy[12]. In a study conducted by Nogueira et al. for the evaluation of the immune system of leprosy cases, no difference was found between clinical forms and control groups in terms of B cells[13]. Similarly, the data obtained in our case was found to be compatible with the expected values in healthy individuals. Although no difference was observed in the distribution of T and B lymphocytes in our case, possible changes in the immune system may have occurred in cell subgroups. In this respect, more comprehensive analyzes can be recommended in subsequent studies. It is important that the patient in our study was younger (36), and the case was detected before the lesions caused serious deformities. In addition, according to our literature research, no other microbiologically confirmed leprosy case was reported from the Mersin region. However, it was also learned that this patient came from the Southeastern Anatolia region, where the cases were relatively common before.

Leprosy is a disease known to cause serious deformities, even death, when neglected. All clinicians, particularly dermatologists, should be aware of leprosy as a potential diagnosis in their differential diagnosis. Timely and accurate identification of leprosy is crucial as it allows for effective treatment and helps prevent permanent damage. It is evident that a multidisciplinary approach involving laboratory specialists in the diagnostic process would greatly benefit both the patient and society as a whole.

CONFLICT of INTEREST

No conflict of interest declared.

AUTHORSHIP CONTRIBUTIONS

Concept and Design: TB, TİK, GA

Analysis/Interpretation: All of authors

Data Collection or Processing: All of authors

Writing: TB, GA

Review and Correction: All of authors

Final Approval: All of authors

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Address for Correspondence/Yazışma Adresi

Dr. Taylan BOZOK

Department of Medical Microbiology,
Mersin University Faculty of Medicine,
Mersin, Türkiye

E-mail: taylanbozok@hotmail.com