

Tuberculous parotitis: a review of seven cases

Parotis tüberkülozu: Yedi olgunun değerlendirilmesi

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Objectives: Tuberculous parotitis is rare even in countries where tuberculosis is widespread. We evaluated seven patients with tuberculous parotitis together with clinical and histopathologic findings, and management.

Patients and Methods: In a period of 13 years, seven patients (5 males, 2 females; mean age 32 years; range 23 to 47 years) were diagnosed and treated for tuberculous parotitis. All the patients had a clinical suspicion of a parotid gland tumor.

Results: The lesions were localized on the left in four patients, and on the right in three patients. The duration of disease varied from seven months to three years. The masses were localized, mobile, and measured 3 to 6 cm in diameter; one was fistulized. There was no evidence for active pulmonary tuberculosis. Chest radiograms showed old tuberculous lesions in two patients. The PPD skin test results were positive (>12 mm induration) in five patients (71%). Computed tomography or magnetic resonance imaging obtained in five patients showed mass formation suggesting a benign parotid gland tumor. Fine-needle aspiration cytology performed in three patients and cultivation performed in the fistulized case were all non-diagnostic. Superficial parotidectomy was performed in six patients and enucleation was performed in one patient. Histopathologic examination showed tubercles composed of macrophages, epithelioid cells and Langhans giant cells, and central caseous necrosis. Following diagnosis, all patients were treated with a four-drug chemotherapy regimen. There was no evidence for recurrence within a mean of 15-month follow-up.

Conclusion: Tuberculosis of the parotid gland should be considered in the differential diagnosis of patients presenting with a solitary tumor in the parotid gland.

Key Words: Antitubercular agents; biopsy, needle; parotitis/etiology/surgery; tuberculosis, oral/pathology/surgery.

Amaç: Tüberküloz parotit, tüberkülozun yaygın olarak görüldüğü ülkelerde bile nadirdir. Bu çalışmada, tüberküloz parotitli yedi hasta klinik ve histopatolojik özellikler ve tedavi açısından değerlendirildi.

Hastalar ve Yöntemler: On üç yıllık bir dönem içinde yedi hastaya (5 kadın, 2 erkek; ort. yaş 32; dağılım 23-47) tüberküloz parotit tanısı kondu ve tedavileri yapıldı. Tüm hastalarda parotis bezi tümörü şüphesine yol açan kitle lezyonları vardı.

Bulgular: Lezyonlar dört hastada sol, üç hastada sağ taraftaydı. Hastalık süresi yedi ay ile üç yıl arasında değişmekteydi. Kitleler lokalize, mobil ve 3-6 cm çapındaydı; bir hastada fistül oluşumu görüldü. Hastalarda aktif pulmoner tüberküloz bulgusuna rastlanmadı; iki hastanın göğüs filmlerinde eski tüberküloz lezyonları gözlemlendi. Deri testi beş hastada (%71) pozitif sonuç (>12 mm endürasyon) verdi. Beş hastada yapılan bilgisayarlı tomografi veya manyetik rezonans görüntüleme benign parotis kitlesini düşündürülen bulgular ortaya koydu. Üç hastada yapılan ince iğne aspirasyon sitolojisi ve fistüllü olguda yapılan kültür çalışmalarından tanıya dönük bulgu elde edilemedi. Altı hastada yüzeysel parotidektomi, bir hastada enükleasyon uygulandı. Histopatolojik incelemede, makrofaj, epitelioid hücre ve Langhans dev hücrelerinden oluşan tüberküller ve santral kazeifikasyon nekrozu görüldü. Tanıdan sonra tüm hastalara dörtlü ilaç tedavisi uygulandı. Tedaviden sonraki ortalama 15 aylık takip süresi içinde hiçbir hastada nüks bulgusuna rastlanmadı.

Sonuç: Parotis bezinde tek bir tümörün olduğu hastaların ayırıcı tanısında tüberküloz parotitin de göz önünde bulundurulması gerekmektedir.

Anahtar Sözcükler: Antitüberküloz ajanlar; biyopsi, iğne; parotit/etyoloji/cerrahi; tüberküloz, oral/patoloji/cerrahi.

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Tuberculosis (TB) is a world-wide infectious disease caused by *Mycobacterium tuberculosis* which can infect virtually any organ.^[1] Extrapulmonary TB represented 22% of TB cases diagnosed in the United States in 1992, and it accounted for 29% of the increase between 1985 and 1992.^[2] Cervical lymphadenitis is the most common form of head and neck tuberculosis, making up 1% to 10% of all TB cases in different series and 15% of the cases of extrapulmonary TB. The major sites of involvement of the head and neck tuberculosis are cervical, laryngeal, nasal, and nasopharyngeal.^[3-5] The course of the disease depends on the organ involved. The lung is commonly the primary site, although other organs are involved. However, tuberculous parotitis is a rare condition that presents as a parotid swelling or abscess.^[6,7] It was first described in 1894 by Von Stubenrauch and, up to now, fewer than 100 cases have been reported in the literature and only 43 cases appeared in the English literature, most of them before 1941.^[8] Tuberculous parotitis usually presents as a localized mass resulting from intracapsular or periglandular lymph nodes. The disease involves the parenchyma of the gland, either through hematogenous spread or from infection of the lymph nodes within or around the parotid gland.^[9] We evaluated seven patients with tuberculous parotitis together with clinical and histopathologic findings, and management.

PATIENTS AND METHODS

In a period of 13 years from 1991 to 2004, seven patients (5 males, 2 females; mean age 32 years; range 23 to 47 years) with tuberculous parotitis were diagnosed and treated at the Otolaryngology Department, Dicle University Hospital, Diyarbakir,

Turkey. The diagnosis was confirmed by histopathologic examination in all cases. All the patients had a clinical suspicion of a parotid gland tumor with diffuse swelling or mass measuring 3 to 6 cm in diameter. Purified protein derivative (PPD) testing was performed in all the patients by intradermal injection of 5 TU of commercially available tuberculin. Fine-needle aspiration cytology (FNAC) was performed in three patients, and cultivation was performed only in one case.

Other routine investigations included complete blood cell count, erythrocyte sedimentation rate, total and differential leukocyte count, and chest x-rays.

All the patients were treated with a four-drug chemotherapy regimen after the diagnosis. The initial treatment was composed of isoniazid, rifampicine, pyrazinamide, and ethambutol or streptomycin for the first two months and maintained with isoniazid and rifampicine for the next seven months. The mean follow-up period after medical treatment was 15 months.

RESULTS

Clinical features

The clinical data are summarized in Table I. All the patients had a lump in the parotid gland, either on the left (n=4) or on the right (n=3) (Fig. 1). There was not any bilateral involvement. The duration of disease varied from seven months to three years.

On physical examination, the masses were localized, mobile, and measured 3 to 6 cm in diameter. Four of them were painful, and one was fistulized (Fig. 2). There was no evidence for active pulmonary tuberculosis; however, chest x-rays of two patients were con-

TABLE I
CLINICAL DATA OF THE PATIENTS

Patients	Age/Sex	Duration of symptoms (months)	TB history	Aktive TB	Chest x-ray	PPD testing (>12 mm)	Culture	Follow-up period (months)
1	37/F	12	-	-	-	+	-	16
2	23/F	19	-	-	-	+	-	15
3	39/F	24	-	-	+	-	-	9
4	45/F	36	-	-	-	+	-	14
5	42/M	11	-	-	-	+	-	10
6	37/F	7	-	-	-	+	-	27
7	26/M	17	-	-	+	-	-	12

TB: Tuberculosis.

sistent with old tuberculous lesions. The PPD skin test results were positive (more than 12-mm induration) in five patients (71%). Computed tomography (CT) and magnetic resonance imaging scans obtained in three and two patients, respectively, showed mass appearances suggesting a benign parotid gland tumor (Fig. 3, 4). Fine-needle aspiration cytology performed in three patients and cultivation performed in the fistulized case were all non-diagnostic.

Superficial parotidectomy was performed in six patients. In one patient, enucleation of the mass was preferred because of substantial risk for damage to the facial nerve and its branches during excision. In all cases, surgical exploration revealed a parotid mass with no clear distinction from the normal parotid gland. The fistulized case was repaired with excision of the involved skin tissue, combined with superficial parotidectomy.

No recurrences were detected during the follow-up period.

Histopathologic features

In all the patients, specimens were evaluated under light microscopy. Histopathologic examination showed tubercles composed of macrophages, epithelioid cells and Langhans giant cells, and central caseous necrosis (Fig. 5).

DISCUSSION

Tuberculosis is a necrotizing granulomatous disease with protean manifestations and a wide distribution. The lungs are most commonly affected. Extrapulmonary sites may be involved during the early course of the disease, with seeding of the mycobacteria manifesting itself as multiple lesions. Among the sites commonly affected, lymph nodes, kidneys, bones, and meninges are widely known.^[10] Tuberculous lymphadenitis is the most common extrathoracic form of the disease, and the cervical lymph nodes are the ones most frequently involved.^[6,11]

Tuberculous parotitis is rare, and the most common among tuberculosis of salivary glands. Mycobacterial infection of the parotid gland usually presents as a slowly growing mass, clinically indistinguishable from a parotid tumor.^[12] In due course, the swelling becomes larger and more indurated, and may then discharge through sinuses. Any infection that is resistant to antibiotic treatment should alert the clinician to suspect tuberculosis and carry out relevant investigations. All the patients in this study had a swelling in the parotid gland mimicking a parotid tumor, except for one patient with a sinus to discharge (Fig. 2).

Tuberculous parotitis can be classified into a “focal form” that spreads from a tuberculous infection of the



Fig. 1 - A 42-year-old male patient with a mass, 3x5 cm in size, in the right parotid region.



Fig. 2 - A 23-year-old female patient with a right preauricular ulcerated lesion with involvement of the parotid gland.

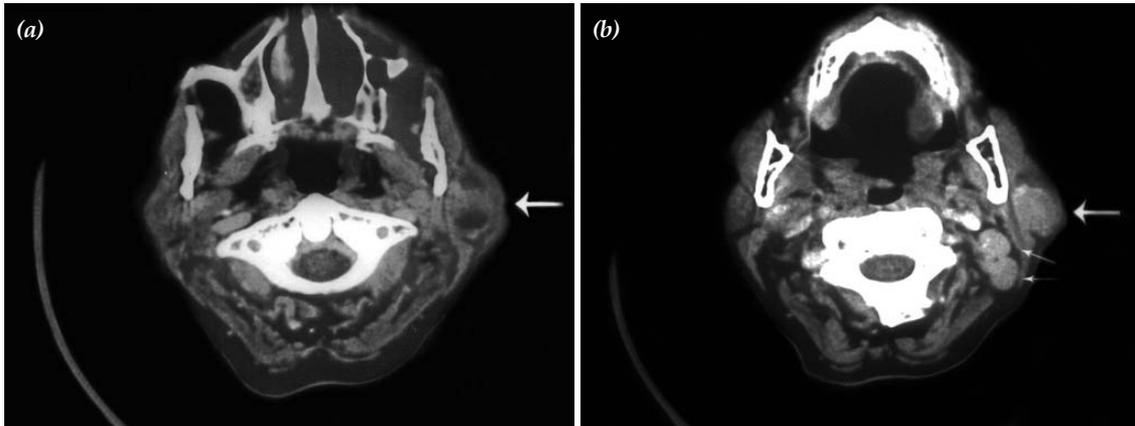


Fig. 3 - (a) CT image of an enhanced parotid mass with central necrotic area (wide arrow). (b) Another image of the same patient taken more inferiorly shows enlargement of lymph nodes (thin arrows).

intraglandular or periglandular lymph nodes, and a “diffuse form” in which the parenchyma is involved diffusely. The diffuse form is said to be rare, and the infection seems to be acquired by the hematogenous route.^[8] However, the diffuse form may have no active disease elsewhere and so it is probable that involvement of the parenchyma is due to secondary spread of primary nodal disease to the surrounding gland.^[11,13,14] These lesions can lead to caseation with formation of fistulae or fibrosis resulting in a clinical picture similar to that of pleomorphic adenoma.^[15] Two of our cases showed diffuse involvement of the parotid gland clinically; however, no parenchymatous involvement was seen histopathologically.

Fine needle aspiration cytology is increasingly used in the diagnosis of tuberculous cervical lymphadenopathy. It is an efficient, cheap, and less invasive way to detect cervical tuberculous lym-

phadenopathy. The sensitivity of FNAC has been found to be 80% while its specificity is 93%.^[16] Because the test has only been recently introduced in our institution, FNAC could be performed in only three patients and the results were not diagnostic. The presence of granulomatous features in FNAC is highly suggestive of tuberculosis especially in endemic areas.^[17,18] Thus, it should be the first line of investigation when diagnosing patients with a parotid mass. Since tuberculosis can be diagnosed initially by FNAC and tuberculosis treatment is primarily medical, FNAC would have helped us avoid unnecessary surgery.

Another advantage of FNAC is that biopsy specimens may provide drug sensitivity of cultures. This technique helps in diagnosis of atypical mycobacterial disease, and appropriate treatment of resistant tuberculosis.^[16]

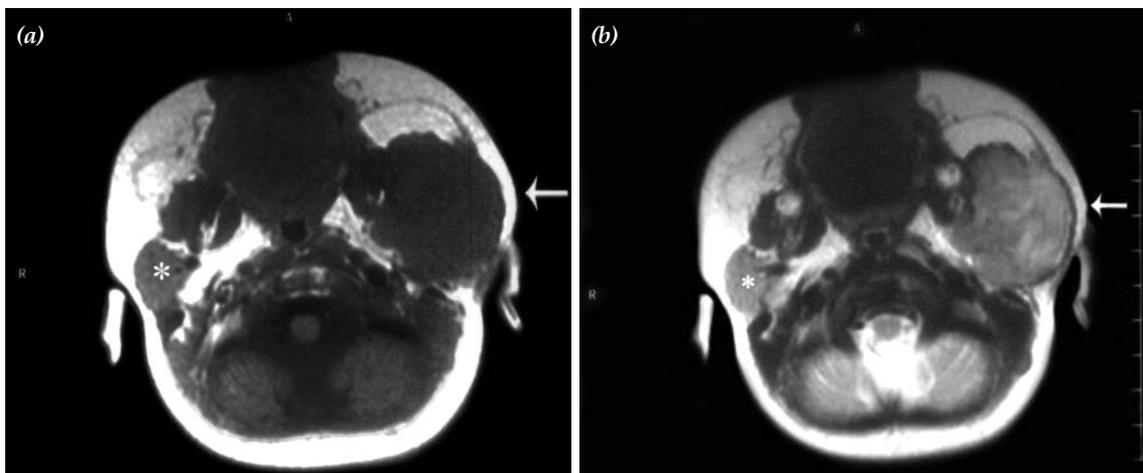


Fig. 4 - A left parotid mass (arrow) of low signal intensity on (a) T₁-weighted and (b) T₂-weighted spin echo images. (*Right parotid gland).

An important characteristic of mycobacterial cervical lymphadenopathy is related to age. Nontuberculous mycobacterial cervical lymphadenopathy (including lymph nodes in and around the salivary glands) almost exclusively occurs in children under 12 years of age especially between the ages of one and three.^[19,20] Patients with mycobacterial lymphadenopathy, over 12 years of age almost always have tuberculous lymphadenopathy and the exception to this is the presence of HIV (human immunodeficiency virus).^[21] However, in Turkey, HIV infection is quite rare while TB is endemic.^[22] In our study, the patients were over 12 years of age and apparently immunocompetent. Therefore, tuberculous parotitis was considered rather than non-tuberculous mycobacterial lymphadenopathy.

Definitive diagnosis depends on the isolation and identification of *M. tuberculosis* from the specimens. However, cultures for mycobacterial bacilli are frequently negative. Since the parotid gland is an uncommon location for tuberculosis, none of our patients underwent specific investigations directed to this etiological agent before surgery. Other investigations include chest x-rays, skin testing, and CT scans.^[8,23]

Patients with cervical adenopathy secondary to *M. tuberculosis* are also likely to have a positive chest x-ray for tuberculosis. This is derived from the belief that cervical disease is part of a generalized process with lymphohematogenous dissemination of pulmonary infection. A review of the literature showed that chest x-rays were positive in 10% to 68% of patients; most studies had positive x-rays in less than 50%. In our study, chest x-rays showed old

tuberculous infection in two patients. Our finding is consistent with those studies that reported a relatively low incidence of positive x-rays in tuberculous cervical lymphadenopathy.^[20]

Skin tests are more useful than chest radiographs. The first or intermediate-strength standard PPD skin tests are strongly positive in mycobacterium tuberculosis infections.^[24] Generally, more than 85% of patients with tuberculous cervical lymphadenitis will have a positive skin test.^[17] Tuberculin test may be negative in children who have an infection caused by atypical mycobacteria or in patients who are immunocompromised by AIDS (acquired immune deficiency syndrome) or drugs. In our study, skin test was positive (induration more than 12 mm) in five (71%) patients. Because PPD testing is simple and has a fairly high accuracy, it should be performed when diagnosing patients with a cervical mass. However, it should be recalled that both a positive PPD skin test and positive x-ray chest radiogram do not provide sufficient evidence for the diagnosis of tuberculous parotitis.^[19] Even if there is suspicion for tuberculous infection, histopathologic confirmation is required in most of the cases.

Computed tomography scanning of affected tissues may show central necrosis, but central necrosis sometimes occurs in other neoplasms, especially in lymphoma.^[25] On CT scans of three patients, there was mass formation with and without central necrosis in one patient and two patients, respectively (Fig. 3). Fine needle aspiration cytology may well suggest mycobacterial infection, especially if Langhans giant cells are present.^[12,13] However, it should be kept in mind that Langhans giant cells may occur in other conditions such as fat necrosis or foreign body reactions.^[12] Handa et al.^[26] emphasized that FNAC should be performed in all parotid lesions where there is suspicion of tuberculosis.

Differential diagnosis includes cat-scratch disease, syphilis, leprosy, tularemia, brucellosis, toxoplasmosis, actinomycosis, suppurative parotitis, mumps, sarcoidosis, Sjögren's syndrome, sialosis, and neoplasms.^[27,28] Clinical features, serologic tests and cultures are important elements for arriving at the correct diagnosis.^[11,29] In our patients, histopathological characteristics provided definitive diagnosis of tuberculosis.

Four-drug antituberculous treatment is given once the diagnosis of tuberculosis is made. Treatment regimens have an initial phase lasting two months and a

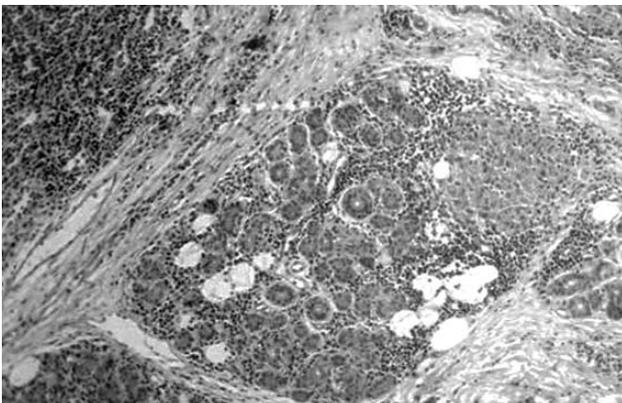


Fig. 5 - Histopathologic view showing granulomatous tissue with Langhans giant cells (H-E x 200).

further phase that usually lasts five to seven months. The initial phase consists of four drugs: isoniazid, rifampicine, pyrazinamide, and ethambutol. Patients become non-infectious in about two weeks. During the second phase, fewer drugs are necessary but are continued for a longer time. The sterilizing effect of these drugs kills the remaining bacilli and prevents subsequent relapse. Other drugs are available for resistant strains.^[6,30,31] These drug combinations (such as macrolide with a quinolone, clarithromycin, or amikacin and ciprofloxacin) were found to be helpful in resistant strains.^[30,32]

Tuberculous parotitis is a forgotten entity in the evaluation of patients with a solitary mass in the parotid gland in the absence of a history of tuberculosis. Tuberculosis of the parotid gland should be considered in the differential diagnosis of patients presenting with a solitary tumor in the parotid gland. Tuberculous lesions of the parotid gland are usually considered to be a tumor. In our patients, these swellings were indistinguishable from a parotid tumor in preoperative investigations and definitive diagnosis was made on the basis of histologic characteristics of the tuberculous infection after surgery.

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