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Pathology in Focus

Tuberculosis of the parotid gland

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Abstract
The presentation of tuberculosis as an isolated parotid lump is rare. In this paper, six cases with tuberculous parotitis are reported which were evaluated as a benign parotid neoplasm in 216 specimens pre-operatively. All but one of them had no previous history of tuberculosis and all had a parotid lump as a sole symptom for at least one year. The diagnosis of tuberculosis was made, after superficial parotidectomy, by histopathology. Parenchymal involvement and intraparotid lymph node involvement with tuberculosis were seen in five and three patients, respectively. Two of the patients had lymph node involvement outside the parotid area. One of six patients had a coincidental Warthin tumour. A surgical approach is not only therapeutic but also diagnostic when other diagnostic tools fail.

Key words: Parotid gland, Tuberculosis

Introduction

Mycobacteria have caused disease in the world for many centuries. Although, the mortality and morbidity of mycobacterial disease has been reduced considerably by improved sanitation, nutrition and medical treatment, a slight increase in its incidence has been observed in the last decade in our country as in the other parts of the world. Mycobacterial disease is encountered in many tissues within otorhinolaryngological practice. The majority of these are cervical lymphadenitis and laryngeal tuberculosis (Appling and Miller, 1981; Güney *et al.*, 1987; Kanlikama *et al.*, 1987; Thaller *et al.*, 1987). Cervical lymphadenitis (scrofula) has been known since ancient Greece (Stanley *et al.*, 1983). Tubercular infection of the salivary gland, first reported by C de Paoli in 1893 (Chaudhary, 1997) is extremely rare. Tuberculous parotitis, involving the gland parenchyma as well as involvement of intraglandular and periglandular lymph nodes has been reported rarely even in endemic areas (Talmi *et al.*, 1990; Singh and Maharaj, 1992).

It is thought that parotid gland tuberculosis possibly occurs by two different modes of development. Firstly, it may begin as an infection of the teeth, tonsillar tissue or by autoinoculation with infected sputum which reaches the parenchyma and/or lymphatics of the parotid gland by afferent lymphatics or by ducts. Secondly, the parotid gland may be infected by metastases from the lungs by a haematogenous or lymphatic route (Stanley *et al.*, 1983; Chaudhary, 1997). Two clinical forms of infection exist. One is a diffuse parenchymatous disease, resembling common parotid inflammation. The second a nodular type which is a chronic, slow growing, painless and firm parotid lump simulating a neoplasm (Kuruvilla *et al.*, 1981).

In this paper, we present six cases of parotid tuberculosis, diagnosed on histopathological examination after surgery among 216 cases with superficial parotidectomy for suspected benign parotid neoplasm for the preceding seven years.

Cases

Out of 216 superficial parotidectomies carried out in the ENT Department, Istanbul School of Medicine, Istanbul University between 1990–1996, six of them were recognized as parotid tuberculosis by histopathological examination. All the patients were female except for one. The average age was 46.1 years, ranging from 23 to 62 years. The most common complaint was a gradually-unilateral growing lump in the parotid region for at least 12 months' duration. In all cases, the physical examination yielded a mobile, non-tender, firm lump in the parotid region. In one patient, there was another palpable node in the submandibular region on the same side. In all but one, there was no known active tuberculosis or tuberculous sequelae in the history. This one patient had a history of anti-tuberculous therapy for pulmonary tuberculosis four years previously. Superficial parotidectomy was performed in these patients who were initially diagnosed as having a benign tumour based on clinical presentation. Diagnosis of tuberculosis, however, was made on histopathological examination and involved the parotid parenchyma in three cases, the intraglandular lymph nodes in one case and both were found in the parenchyma and intraglandular lymph node in two cases (Table I). A Warthin tumour has also been detected in the patient with tuberculosis involving the parenchyma and lymph nodes. In all patients, tuberculin and sputum analysis for bacilli (acid-fast stain and culture) were performed and chest X-rays were reviewed after surgery. Anti-tuberculous chemotherapy was commenced in all cases and they are still being followed up.

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TABLE I
SUMMARY OF CLINICAL DATA AND LABORATORY FINDINGS OF THE PATIENTS

Case/Sex/ Age	Symptom	Duration (months)	Location of the lump	Previous history of tuberculosis	Histopathology location	Sputum stain	Tuberculin test	Sputum culture	Chest X-ray
1/F/52	lump	12	Angle of mandible	no	Parotid parenchyma, Intraparotid lymph node and upper jugular lymph node	−	+	−	+
2/F/23	lump, pain	18	Preauricular	yes	Intraparotid lymph node	−	+	−	apical calcification
3/F/32	lump	22	Preauricular	no	Parotid parenchyma	−	+	−	−
4/F/48	lump	19	Angle of the mandible, submandibular area	no	Parotid parenchyma, submandibular lymph node	−	+	−	−
5/F/30	lump	10	Angle of the mandible	no	Parotid parenchyma	−	+	−	−
6/M/60	lump	14	Angle of the mandible	no	Parotid parenchyma Intraparotid lymph node	−	+	−	−

Histopathological findings

Macroscopically enlarged involved lymph nodes were observed as well as the salivary glands in four cases, the largest of the salivary glands was 5 × 3 × 2 cm in size and contained yellow-white necrotic areas in lobules. Similar necrotic areas were detected in the lymph nodes. Microscopically there was a decrease in the number of ducts and acini within the salivary glands. Tubercles formed by small and large irregular epithelioid cells surrounded by fibrous tissue were seen (Figure 1). Caseous necrosis existed in the centre of tubercles in all of the cases (Figure 2). Furthermore there were Langhans' type giant cells with

FIG. 1
Ectatic ductules and tubercles fibrous tissue at the centre and normal parotid tissue below (H & E; × 32)

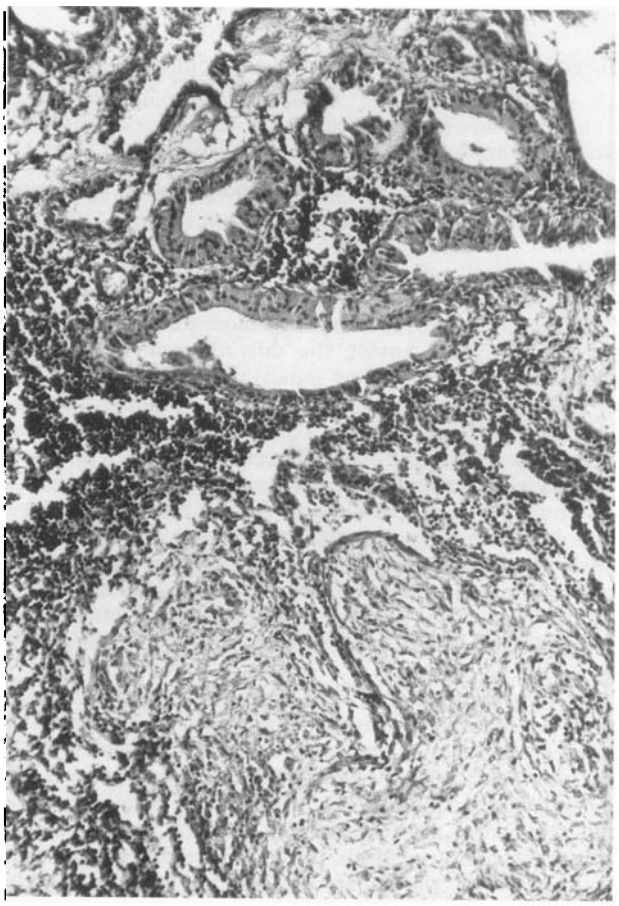

FIG. 2
Warthin's tumour above and tubercles below (H & E; × 125)

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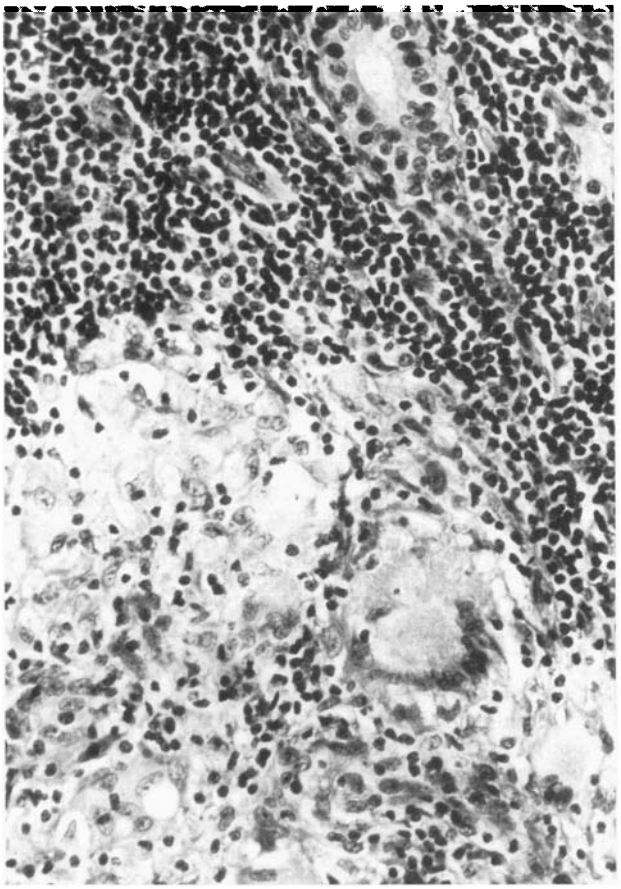

FIG. 3
Tubercles composed of macrophages epithelioid cells and Langhans' giant cells below (H & E; × 310)

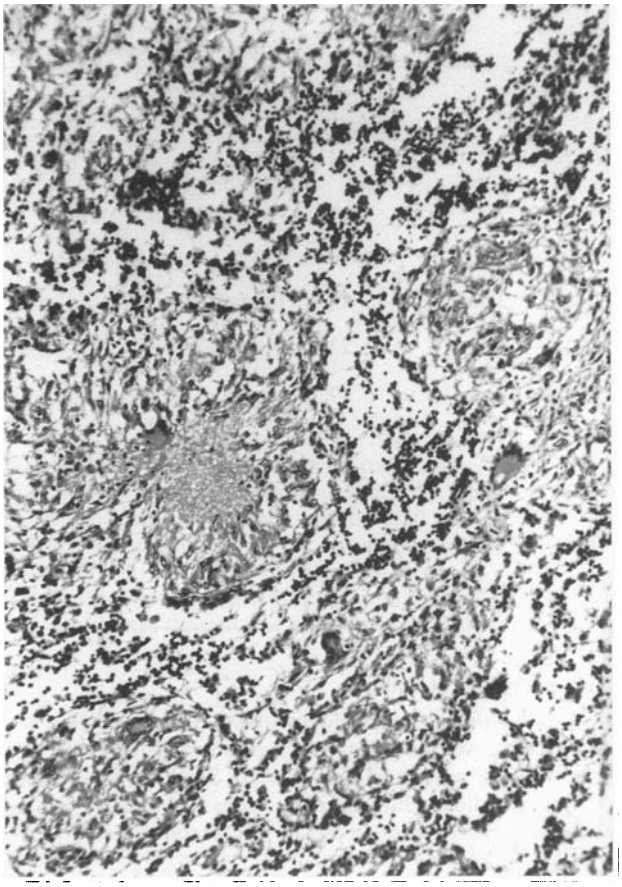

FIG. 4
Tubercles showing central caseous necrosis (H & E; × 125)

lymphocyte infiltrations (Figure 3 and Figure 4). One case was associated with a Warthin tumour.

Discussion

Extrapulmonary tuberculosis is most commonly seen in the parotid gland among the salivary glands. Although there is no physical finding indicating the infectious focus in the majority of patients with granulomatous cervical lymphadenitis, up to 30 per cent will have an extranodal disease, mostly in the lungs (Rivington, 1979). Therefore salivary gland tuberculosis can be considered as a part of systemic mycobacterial disease. On the other hand, since radiological findings of pulmonary disease are detected in fewer than 50 per cent of patients with extrapulmonary tuberculosis, parotid gland tuberculosis may be considered as a primary focus as in primary pulmonary tuberculosis (Appling and Miller, 1981; Betts and Reese, 1986; Allava *et al.*, 1988).

M. tuberculosis is the usual causative organism in older ages while atypical mycobacteria are seen frequently between the ages of one to three years (Waldman, 1982; Pransky *et al.*, 1990). Differential diagnosis between *M. tuberculosis* and atypical mycobacteria can be made by the tuberculin test, acid alcohol fast stain of the saliva and culture of micro-organism. In the diffuse parenchymatous type, in which the tuberculin test is generally weakly positive, atypical mycobacteria are the dominant causative organisms (Long and Jafek, 1974). In the nodular type, intraglandular lymph nodes are more frequently affected, and this form may resemble tuberculosis originating from another primary infectious focus (Donohue and Bolden, 1961). A hypersensitivity response leads to the micro-organism being covered in scar tissue. These bacilli can be reactivated to cause an extrapulmonary disease even after long periods of time (Cantrell *et al.*, 1975). Clinically, localized tuberculosis involves the parotid gland while the submandibular gland is affected in systemic disease (Stanley *et al.*, 1983). In the patients presenting with a slowly growing lump, however, symptoms like fever, night sweating and weight loss often do not exist. These symptoms which might have occurred and stopped a long time ago must be sought by detailed history.

If there are no accompanying symptoms, diagnosis of the mycobacterial infection is extremely difficult in salivary glands or peripheral lymph nodes, and it is often misdiagnosed as a benign salivary neoplasm or enlarged cervical lymph node of unknown causation. Thus, most of the cases are recognized only after the histopathological examination of parotidectomy specimens (Üneri *et al.*, 1990; O'Connel *et al.*, 1993; Bhat and Stansbie, 1996). Diagnosis was made by histopathological examination in all our cases. In the last 10 years, 34 cases of parotid tuberculosis have been reported in the English literature. In a limited number of these cases, laboratory studies had indicated tuberculosis but most of them had been diagnosed solely by histopathology after surgery (Üneri *et al.*, 1990; Üstüner *et al.*, 1991; Ataman *et al.*, 1992; O'Connel *et al.*, 1993).

Fine needle aspiration cytology (FNAC) of the parotid lump with a high index of suspicion or on a routine basis can provide the diagnosis of parotid or cervical lymph

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node tuberculosis by cytological examination of the aspirated material (Shaha *et al.*, 1986; Lau *et al.*, 1990; Bhat and Stansbie, 1996). The sensitivity of FNAC has been found to be 80 per cent while its specificity is 93 per cent (Dandabat *et al.*, 1990). However histopathological examination of the specimen remains the definitive diagnostic test.

Since the parotid gland is an uncommon location for tuberculosis, none of our patients had undergone specific investigations directed at this aetiological agent. Investigations of tuberculous infection were performed after obtaining the histopathological result. However, we could not find evidence of active pulmonary disease in any of our patients except the one who had had a previous tuberculous infection and apical calcification on her chest X-ray.

Six cases of parotid tuberculosis in our ENT clinic in the last seven years, constitute only 2.8 per cent of parotid specimens. Although parenchymal involvement is rare in the cases reported in the literature, five of our cases showed this form of disease (Figure 1 and Figure 3). Tuberculosis was seen in intraglandular and periglandular lymph nodes in four cases. Parotid tuberculosis associated with Warthin tumour in one of the patients can be interpreted as an interesting coincidence.

In the case of early diagnosis, anti-tuberculous chemotherapy is the primary treatment modality in parotid tuberculosis (Chaudhary, 1997). Although tuberculosis treatment is not primarily surgical, less recurrence is reported with surgery plus medical treatment (Stanley *et al.*, 1983). Since bacilli remain latent in the tubercles, surgical resection can serve both as a diagnostic and therapeutic tool. However, if tuberculosis can be diagnosed initially by radiological, cytological (by FNAC) and microbiological methods in the patient with a parotid lump, medical treatment should be given first and surgical intervention should be considered according to the patient's response to this therapy or for histological confirmation. We conclude that a parotid lump should rise the suspicion of tuberculosis despite its rarity and, if it is technically possible, FNAC should be performed to avoid surgery as the first choice of treatment.

References

Allava, M., Guida, R. A., Remo, T. (1988) Mycobacterial cervical lymphadenitis: A persistent diagnostic problem. *Laryngoscope* **98:** 855–857.

Appling, D., Miller, R. H. (1981) Mycobacterial cervical lymphadenopathy; 1981 update. *Laryngoscope* **91:** 1259–1266.

Ataman, M., Sözeri, B., Özçelik, T., Gedikoğlu, G. (1992) Tuberculosis of the parotid salivary gland. *Auris Nasus Larynx* **19:** 271–273.

Betts, R. F., Reese, R. E. (1986) Lower respiratory tract infections. In *A Practical Approach to Infectious Diseases.* 2nd Edition. (Reese, R. E., Douglas, R. G., eds.), Little, Brown and Co., Boston/Toronto, pp 239–240.

Bhat, N. A., Stansbie, J. M. (1996) Tuberculous parotitis: a case report. *Journal of Laryngology and Otology* **110:** 976–977.

Cantrell, R., Jensen, J., Reid, D. (1975) Diagnosis and management of tuberculous cervical adenitis. *Archives of Otolaryngology – Head and Neck Surgery* **101:** 53–57.

Chaudhary, S. (1997) Tuberculosis of the salivary glands. In *Color Atlas and Text of the Salivary Glands.* (Norman, J. E., McGurk, M., eds.), Mosby-Wolfe, London, pp 337–339.

Dandabat, M. C., Misha, B. M., Dash, S. B., Kar, P. K. (1990) Peripheral lymph node tuberculosis: a review of 80 cases. *British Journal of Surgery* **77:** 911–912.

Donohue, W., Bolden, T. (1961) Tuberculosis of salivary glands. *Oral Surgery* **14:** 576–588.

Güney, E., Şeşen, T., Yalçin, Ş., Konakçı, G. (1987) Baş-Boyun bölgesi adenit tüberkülozlari. *Türk Otolaryngoloji Arşivi* **25:** 166–174.

Kanlıkama, M., Özsahinoğlu, C., Akan, E. (1987) Mikrobakteriyel servikal lenfadenitler. *Türk Otolaryngoloji Arşivi* **25:** 175–190.

Kuruvilla, A., Saha, N. K., Barton, R. P. E., Zardawi, I. M. (1981) Tuberculosis of intraparotid lymph nodes. *Journal of Laryngology and Otology* **95:** 1165–1167.

Lau, S. K., Wei, W. I., Hsu, C., Engzell, U. C. G. (1990) Efficacy of fine needle aspiration cytology in the diagnosis of tuberculous cervical lymphadenopathy. *Journal of Laryngology and Otology* **104:** 24–27.

O'Connel, J. E., George, M. K., Speculand, B., Pahor, A. L. (1993) Mycobacterial infection of parotid gland: an unusual case of parotid swelling. *Journal of Laryngology and Otology* **107:** 561–564.

Pransky, S. M., Reisman, B. K., Kearns, D. B., Seid, A. B., Collins, D. C., Krous, H. F. (1990) Cervicofacial mycobacterial adenitis in children: endemic to San Diego. *Laryngoscope* **100:** 920–925.

Rivington, R. N. (1979) Tuberculous cervical lymphadenitis. *Canadian Medical Association* **121:** 1572.

Shaha, A., Webber, C., Marti, J. (1986) Fine-needle aspiration in the diagnosis of cervical lymphadenopathy. *American Journal of Surgery* **152:** 420–423.

Singh, B., Maharaj, T. J. (1992) Tuberculosis of the parotid gland: clinically indistinguishable from a neoplasm. *Journal of Laryngology and Otology* **106:** 929–931.

Stanley, R. B., Fernandez, J. A., Peppard, S. B. (1983) Cervical mycobacterial infections presenting as major salivary gland disease. *Laryngoscope* **93:** 1271–1275.

Talmi, Y. P., Shem-Tov, Y., Gal, R., Finkelstein, Y., Zohar, Y. (1990) Tuberculosis of a periglandular lymph node presenting as a parotid tumor. *Journal of Otolaryngology* **19:** 73–75.

Thaller, S. R., Gross, J. R., Pilch, B. Z., Goodman, M. L. (1987) Laryngeal tuberculosis as manifested in the decades 1963-1983. *Laryngoscope* **97:** 848-850.

Üneri, C., Tutkun, A., Sehitoğlu, M. A. (1990) Tükrük bezlerinin primer tüberkülozu. *Haydarpaşa Numune Hastanesi* **30:** 230–233.

Üstüner, T. E., Şenöz, O., Koçer, U. (1991) Primary tuberculosis of the parotid gland. *Plastic and Reconstructive Surgery* **88:** 884–885.

Waldman, R. H. (1982) Tuberculosis and atypical mycobacteria. *Otolaryngologic Clinics of North America* **15:** 581-596.

Wong, M. L., Jafek, B. W. (1974) Cervical mycobacterial disease. *Trans American Academia of Ophthalmology and Otology* **78:** 75–87.

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