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Artículo Original

Otorhinolaryngology-related tuberculosis: a 10 years retrospective study

Tuberculose em Otorrinolaringologia: Estudo retrospectivo dos últimos 10 anos

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Resumo

Introdução: A tuberculose permanece um importante problema de saúde pública. Recentemente, o aumento da imigração, da pobreza e dos casos de imunodeficiência tem contribuído para o aumento da tuberculose pulmonar e em particular das formas extra-pulmonares. A tuberculose em Otorrinolaringologia é uma condição clínica rara, mas que constitui um importante desafio clínico.

Métodos: Análise retrospectiva dos casos de tuberculose relacionada com otorrinolaringologia, diagnosticados no Hospital Pedro Hispano, entre Janeiro de 2004 e Dezembro de 2013.

Resultados: Onze doentes foram diagnosticados com tuberculose relacionada com Otorrinolaringologia. A idade média foi de 49.4+/-25.2 anos e 73% dos doentes eram do sexo feminino. A localização mais comum foi os gânglios cervicais (5 casos- 45,4%), seguido pela laringe e ouvido (3 casos cada). O tempo de diagnóstico foi maior para a tuberculose do ouvido (170+/-134.9 dias) seguida da tuberculose laríngea (84+/-6.5 dias) e adenite cervical tuberculosa (48.6+/-18.7 dias). Os exames histológicos e microbacteriológicos contribuíram

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para o diagnóstico em 90% dos casos. O período de tratamento foi maior para a tuberculose do ouvido (10 meses) seguido pela adenite cervical tuberculosa (9 meses) e tuberculose laríngea (7 meses). O tratamento levou ao desaparecimento das lesões iniciais, não tendo sido registados efeitos laterais significativos da medicação instituída.

Conclusão: A infecção por *Mycobacterium tuberculosis* em Otorrinolaringologia é um desafio clínico devido aos seu carácter indolente e sintomas inespecíficos, e, portanto, deve ser levada em consideração no diagnóstico diferencial. Assim, apenas um elevado nível de suspeita permitirá um diagnóstico atempado, melhorar a eficácia do tratamento e reduzir as sequelas.

Palabras clave: Tuberculose; Tuberculose extra-pulmonar; Tuberculose laríngea, Adenite cervical tuberculosa.

Abstract

Introduction: Tuberculosis remains a major public health problem. Recently, increased immigration, poverty and immunodeficiency conditions have contributed to an increase in pulmonary tuberculosis, and in particular to extrapulmonary forms. Otorhinolaryngology-related tuberculosis is a rare clinical problem but constitutes a significant clinical and diagnostic challenge.

Methods: A retrospective analysis of otorhinolaryngology-related tuberculosis, diagnosed at the Pedro Hispano Hospital between January 2004 and December 2013 was performed.

Results: Eleven patients were diagnosed with Otorhinolaryngology-related tuberculosis. The mean age was 49.4 +/- 25.2 years and 73% of the patients were female. The most common location was cervical ganglion (5 cases - 45.4%), followed by the larynx and ear (3 cases each). The time of diagnosis was greater for ear tuberculosis (170 +/- 134.9 days) followed by larynx tuberculosis (84 +/- 6.5 days) and cervical tuberculous adenitis (48.6 +/- 18.7 days). The histological and microbiological examination contributed to the diagnosis in 90% of cases. Medical therapy was instituted in all cases. The treatment period was higher for the ear tuberculosis (10 months) followed by cervical tuberculous adenitis (9 months), and larynx tuberculosis (7 months). The treatment led to the disappearance of the initial injury and has not been recorded side effects of medication established.

Conclusion: The *Mycobacterium tuberculosis* infection in Otorhinolaryngology is a clinical challenge because of its indolent character and nonspecific symptoms, and should be an entity into consideration in the differential diagnosis. Thus, only a high level of suspicion allow an early diagnosis, improve treatment efficiency and reduce sequelae.

Keywords: Tuberculosis; Extrapulmonary tuberculosis; Otorhinolaryngology-related tuberculosis; Ear tuberculosis; Laryngeal tuberculosis, Cervical tuberculous adenitis

Introduction

Tuberculosis (TB) remains a major public health problem. In 2013, approximately 9 million new cases and 1.1 million deaths were recorded worldwide due to the disease¹. In the last two decades the rate of new TB cases has decreased in Portugal from 63 to 22 cases per 100.000 population^{1,2}. Although this positive improvement in TB control, Portugal still has one of the highest notification rates in Western Europe^{1,2}. In Portugal, the district of Porto (Matosinhos included) has a higher TB incidence compared to the rest of the country (30,3 cases per 100.000), and has increased in last few years^{1,2}.

In most industrialized countries pulmonary tuberculosis (PT) is the most common form of TB, but in recent years extra-pulmonary tuberculosis (EPTB) has increased as a proportion of total tuberculosis cases³. Recent studies, indicate that EPTB is responsible for approximately 25% of overall tubercular morbidity^{4,5}. EPTB diagnosis is often delayed due to its lack of disease-specific symptoms and slowly-evolving sub-clinical pattern, the difficulty in obtaining diagnostic samples and the diminished awareness amongst doctors⁴⁻⁶.

Among EPTB, otorhinolaryngology-related tuberculosis is an uncommon, but not rare clinical problem⁷. The most frequent otorhinolaryngeal manifestation of TB is cervical lymphadenitis followed by laryngeal and middle ear TB⁷. In 25-30% these manifestations are associated with PT⁷.

For a better understanding of the clinical and epidemiological aspects of Otorhinolaryngology-related TB, we reviewed all cases admitted in our department in the last 10 years.

Methods

This work is a retrospective study conducted at the Pedro Hispano Hospital in Matosinhos, Portugal. Patients with diagnosis of otorhinolaryngology-related tuberculosis during the period of 2004 to 2013 were included in this study. All data were obtained from medical records and recorded in a database in Excel. Demographic data such as age and sex, predisposing factor associated with tuberculosis, clinical manifestation and diagnosis tools were recorded. The pharmacological treatment, associated complications, and treatment time for tuberculosis were also recorded.

SPSS software (version 18) was used for statistical analysis. A descriptive analysis of the data was performed by calculating frequencies and percentages of qualitative variables. Quantitative variables were described as means or medians with their respective standard deviation.

Results

During the period studied 11 patients were included, 8 female (72.7%) and 3 male. The patients' age range was 13-83 years and mean 49,4 +/- 25,2 years (Fig. 1).

Analyzed by year, no cases of otorhinolaryngology-related tuberculosis were found before 2006. A total of 2 cases were found in 2007 and 2008, that decreased to 1 case in 2009 and none 2010. After 2010, the number increased to 1 case in 2011, 2 cases in 2012 and 3 cases in 2013 (Fig. 2).

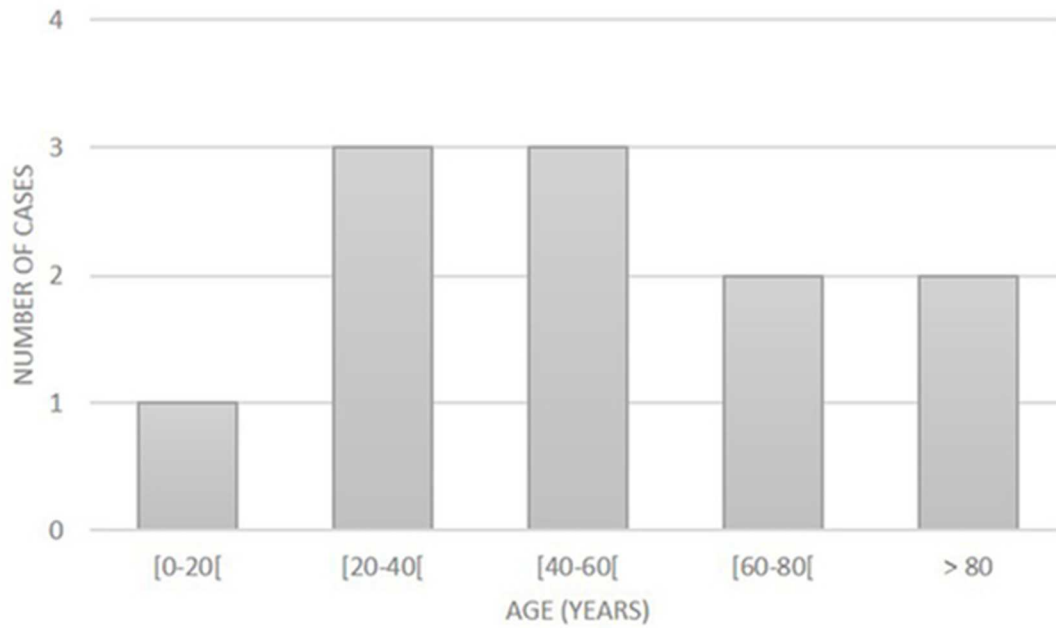


Figure 1: Distribution of otorhinolaryngology-related tuberculosis according to age.

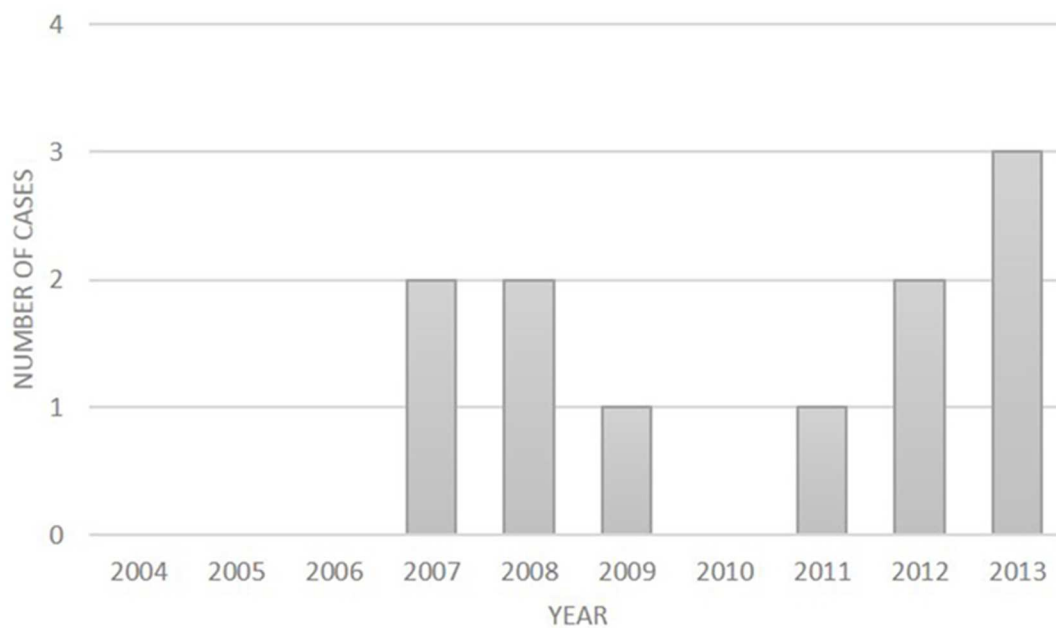


Figure 2 - Annual distribution of otorhinolaryngology-related tuberculosis cases.

The most common site of *M. tuberculosis* infection in head and neck region was cervical lymph nodes - 5 cases (45%), followed by larynx and ear, both with 3 cases (27%). We also observed that prevalence of tuberculosis in all sites of infection tended to be higher in females (male:female ratio 1:2,7), particularly in cervical tuberculous lymphadenitis (female to male ratio - 4:1) (Fig. 3).

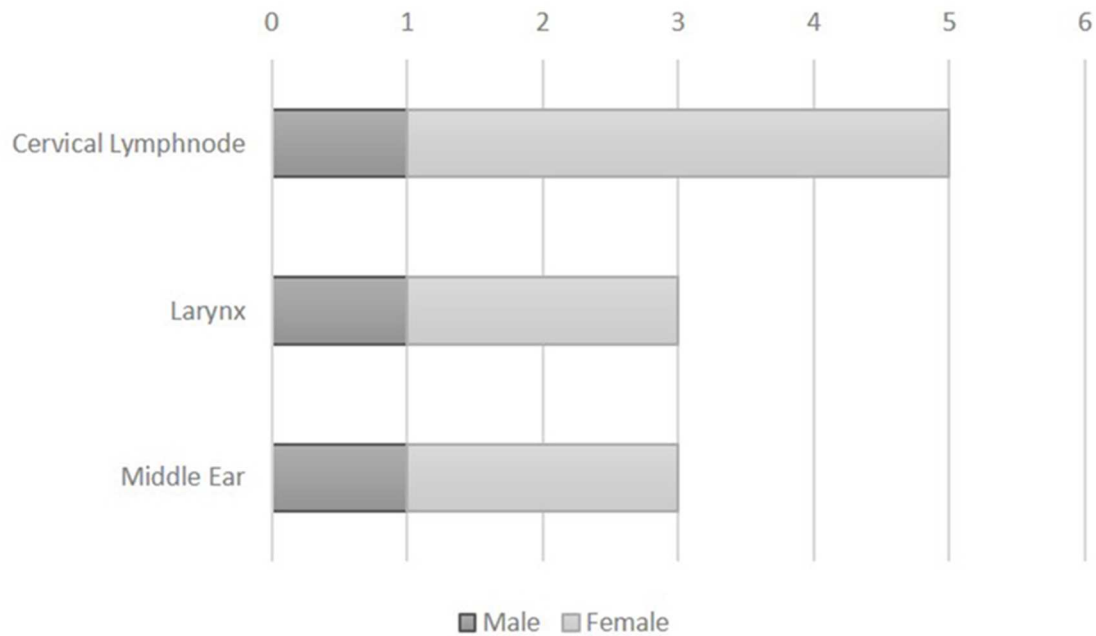


Figure 3: Site and gender distribution of otorhinolaryngology-related tuberculosis.

All patients underwent histopathological examination and bacterial culture, and together contributed to the final diagnosis in 90% of the cases - 5 cases each. In 8 cases the bacterial culture was positive for *Mycobacterium tuberculosis complex*, being drug-sensitive in all of them. However, we observed for both tests a high number of false negatives, 5 for histopathological examination and 3 for bacterial culture. One case of ear tuberculosis, both histopathological examination and bacterial culture were negative. In this case the diagnosis was presumed after the good patient response to TB medication. Tuberculin skin test was performed in 4 cases, and was positive in all of them. PCR testing for TB was not performed in any case.

The period from first examination to the final diagnosis was higher in the cases of ear tuberculosis (170 +/- 134,9 days), followed by laryngeal tuberculosis (84 +/- 6,5 days), and cervical tuberculous lymphadenitis (48,6 +/- 18,7 days).

When analyzing the background factors, contact with infected patients was found in 2 cases, chest x-ray abnormalities in 3 cases, active pulmonary tuberculosis in 1 case, past history of tuberculosis infection in 1 case and HIV infection in 1 case. The case with active pulmonary tuberculosis was found in a HIV positive patient with concomitant laryngeal tuberculosis.

Patients with laryngeal and ear tuberculosis were submitted to surgery prior to definitive diagnosis. All patients regardless of its location underwent anti-tuberculous therapy (isoniazid, pirazinamid, rifampicin and etambutol). The average therapy length was 8,7 months, with ear tuberculosis presenting a longer therapy period (10 months), followed by cervical tuberculous lymphadenitis (9 months), and laryngeal tuberculosis (7 months).

In the follow up an elderly patient died one month after initiating medical treatment due to a cerebrovascular accident. All other patients had a full recovery with the disappearance of all lesions. No therapy side-effects were recorded in all patients.

Discussion

Tuberculosis is one of the most common granulomatous infections that involve the otorhinolaryngeal region³. Although the incidence of EPTB has come down significantly in the last few decades, it has shown a disproportionately slower decrease compared with the decrease in PT^{3,7}.

In our series over a period of 10 years, no cases were found previous to 2006. This fact is probably due to the diminished awareness amongst the doctors or missing or incorrect disease coding. After 2006 we observed an average of 1,6 patients per year.

Being a rare entity in otolaryngology practice, tuberculosis diagnosis is often delayed or even missed mainly due to its lack of disease-specific symptoms and slowly-evolving sub-clinical pattern, the difficulty in obtaining diagnostic samples and the diminished awareness amongst doctors⁴⁻⁶. This fact can result in potential serious sequelae for the patients and contribute to the spread of the disease⁸.

In the present study, the patients with cervical tuberculous lymphadenitis and laryngeal tuberculosis had a shorter period between the onset of symptoms and the final diagnosis, mainly because of the initial suspicion of malignant tumor which led to an early histopathological examination. On opposite, ear tuberculosis is often a diagnosis only thought after therapy failure, which can lead to a late diagnosis as we observed in our study. This long period of observation is also described by other researchers^{9,10}. Other EPTB weren't observed in our study, such as pharyngeal, nasossinusual tuberculosis or tuberculous sialadenitis.

The identification of risk factors for EPTB could be an important step towards a faster diagnosis. Consistent with other studies, our study showed similar common sites of EPTB, being cervical tuberculous lymphadenitis the most frequent EPTB^{4,7}. We also observed that otorhinolaryngology-related tuberculosis is more frequent in females (male:female ratio 1 : 2,67). This observation is in line with previous studies where female sex is an independent risk factor for EPTB^{3,4}. Other studies point out that important clues can be found in the patients' background such as contact with infected patients, present or past history of tuberculosis, HIV infection⁸. Laryngeal and otological tuberculosis are historically related with coincidental tuberculosis⁷, but in our series only one of the three patients with histopathology-proven laryngeal tuberculosis had coexisting PT. The other patients with laryngeal and ear TB had primary otorhinolaryngeal tuberculosis. HIV-positive patients have an higher risk of EPBT, including in the otorhinolaryngeal region^{11,12}. However in our series only one of the eleven patients had HIV-infection. We believe that otorhinolaryngology-related tuberculosis is under-diagnosed in patients with PT because usually all lesions and symptoms rapidly disappear after initiating TB medication. In fact, recent studies point out that up to 13% of patients with PT have otorhinolaryngeal manifestations¹³.

Our experience showed that histopathological examination and bacterial culture were together responsible for 90% of all otorhinolaryngology-related tuberculosis diagnosis. Therefore these tests remain the cornerstone of TB diagnosis and should be performed in all suspected cases of otorhinolaryngeal tuberculosis. Although multidrug-resistant tuberculosis is an increasing problem in patients with PT worldwide¹, all patients in our series were infected with drug-sensible *M. tuberculosis*.

Nowadays newer tests such as PCR and Interferon gamma release assays (IGRA) have appeared. However, although faster in proving a TB diagnosis PCR is still very expensive and its practical use is controversial. On other hand IGRA is useful in detecting latent TB, but its application in active tuberculosis is still open for debate⁷.

All 11 patients were referred to their respective directly observed treatment short-course clinics and treated according to the National Tuberculosis Programme Guidelines. Surgery was performed in all patients with laryngeal and ear tuberculosis, mainly to establish diagnosis and in the cases of middle ear tuberculosis to removed infected tissue. No side-effects were recorded which strengths the overall safety of TB medication.

Conclusion

Although the otorhinolaryngeal manifestations of tuberculosis are rare in clinical practice, a high index of suspicion is necessary given the similarity in clinical presentation and appearance particularly to head and neck malignancies and other chronic noninfective and infective pathological conditions. Future identification of EPBT risk factors could provide an important help in identifying these cases. An early and accurate diagnosis are crucial for initiating treatment, reducing long-term sequelae of EPTB and the spread of the disease.

Conflicts of interest: The authors have no conflicts of interest to declare.

References

- 1- World Health Organization (WHO), Global tuberculosis report 2014. Geneva: WHO:2014. Available from: http://apps.who.int/iris/bitstream/10665/137094/1/9789241564809_eng.pdf
- 2- Macedo R, Silva AS, Rodrigues IJ, Rodrigues I, Furtado C, Simões MJ. Vigilância Laboratorial da Tuberculose em Portugal: relatório 2012. Silvestre E, editor. Instituto Nacional de Saúde Doutor Ricardo Jorge; 2013. p. 7-48.
- 3- Peto, H.M., et al., Epidemiology of extrapulmonary tuberculosis in the United States, 1993-2006. Clin Infect Dis 2009; 49(9): 350-7.
- 4- Sanches I, Carvalho A, Duarte R. Who are the patients with extrapulmonary tuberculosis? Rev Port Pneumol. 2015; 21(2): 90-3.
- 5- Ricciardiello, F., et al. Otorhinolaryngology-related tuberculosis. Acta Otorhinolaryngol Ital. 2006; 26(1): 38-42.
- 6- Chmielik, L.P., et al., Ear tuberculosis: clinical and surgical treatment. Int J Pediatr Otorhinolaryngol. 2008; 72(2): 271-4.

- 7- Michael, R.C. and J.S. Michael, Tuberculosis in otorhinolaryngology: clinical presentation and diagnostic challenges. *Int J Otolaryngol.* 2011: 686894.
- 8- Konishi, K., et al., Study of tuberculosis in the field of otorhinolaryngology in the past 10 years. *Acta Otolaryngol Suppl.* 1998; 538: 244-9.
- 9- Bruzgielewicz, A., et al., Tuberculosis of the head and neck - epidemiological and clinical presentation. *Arch Med Sci.* 2014; 10(6): 1160-6.
- 10- Penfold, CN, Revington PJ. A review of 23 patients with tuberculosis of the head and neck. *Br J Oral Maxillofac Surg.* 1996; 34(6): 508-10.
- 11- Sharma SK, Mohan A. Extrapulmonary tuberculosis. *Indian J Med Res.* 2004; 120(4): 316-53.
- 12- Singh, B., et al. Laryngeal tuberculosis in HIV-infected patients: a difficult diagnosis. *Laryngoscope.* 1996; 106(10): 1238-40.
- 13- De Sousa RT et al. Frequency of Otorhinolaryngologies' Manifestations in Patients with Pulmonary Tuberculosis. *Int. Arch. Otorhinolaryngol.* 2010; 14(2): 156-162.