

# MANAGEMENT AND CLINICAL FEATURES OF EXTRA NODAL ENT TUBERCULOSIS: ABOUT 7 CASES

## PRISE EN CHARGE ET ASPECTS CLINIQUES DE LA TUBERCULOSE ORL EXTRA-GANGLIONNAIRE: À PROPOS DE 7 CAS

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### ABSTRACT

**Background:** Extra-nodal tuberculosis is a rare pathology of the ear, nose and throat (ENT). It remains a worldwide health problem despite the development seen.

**Results:** We report 7 cases of extra-nodal localisations, collected at the ENT department of Farhat Hached Hospital of Susa, between 2008 and 2022.

There were 2 females and 5 males, aged between 15 and 45 years (mean: 29 years). The disease affected the cavum in 2 cases, the parotid gland in 1 case, the palatine tonsils in 2 cases the pharyngo-larynx in 1 case and retropharyngeal space in 1 patient. The diagnosis was histopathological in all cases. All patients received anti-tuberculosis treatment. The outcome was favourable in all cases. The aim of our work was to focus on the epidemiological, diagnostic and therapeutic aspects of this pathology.

**Conclusion:** Practitioners should keep in mind the involvement of the ENT sphere in tuberculosis in endemic areas and confirm it by bacteriological and histological examinations. Treatment is based on anti-tuberculosis drugs.

**Key words:** Tuberculosis, ENT sphere, Extra-nodal

### RÉSUMÉ

**Introduction:** La tuberculose extra-ganglionnaire est une pathologie rare en ORL. Cela reste un problème de santé mondial malgré les progrès médicaux.

**Résultats:** Nous rapportons 7 cas de localisations extra-ganglionnaires de la tuberculose, colligés au service ORL de l'hôpital Farhat Hached de Sousse, entre 2008 et 2022.

Il s'agissait de 2 femmes et 5 hommes, âgés de 15 à 45 ans (moyenne: 29 ans). La maladie touchait le cavum dans 2 cas, la glande parotidienne dans 1 cas, les amygdales palatines dans 2 cas, le pharyngo-larynx dans 1 cas et l'espace rétropharyngé chez 1 patient. Le diagnostic était histopathologique dans tous les cas. Tous les patients ont reçu un traitement antituberculeux. L'évolution était favorable dans tous les cas.

L'objectif de notre travail était de décrire les aspects épidémiologiques, diagnostiques et thérapeutiques de cette pathologie.

**Conclusion:** Les praticiens doivent garder à l'esprit l'implication de la sphère ORL dans la tuberculose en zone d'endémie et la confirmer par des examens bactériologiques et histologiques. Le traitement repose sur les médicaments antituberculeux.

**Mots clés:** Tuberculose, ORL, Extra-ganglionnaire.

### INTRODUCTION:

Tuberculosis (TB) remains a major public health problem and a leading cause of morbidity and mortality in the global population. Approximately one third of the world's population is latently infected with Mycobacterium tuberculosis [1]. Tunisia is the third country in the world to be endemic to TB, extrapulmonary TB represents 15% but extra-nodal head and neck localisations are very rare[2]. The clinical manifestations as well as radiology and endoscopy are not pathognomonic and it should be mentioned as a differential diagnosis

in head and neck malignant tumours and other chronic infective and non-infective pathological conditions [3]. The aim of our work was to focus on the epidemiological, diagnostic and therapeutic aspects of this pathology.

**Patients and Methods:**

This is a retrospective study of seven cases of extra-nodal TB, collected at the ENT department of Farhat Hached Hospital of Susa, over a period of 14 years [2008-2022].

For each patient, a complete clinical examination was carried out, including an interview (age, sex, medical



history, concept of infection, functional signs...) and a physical examination specifying the semiological characteristics according to location as well as the presence of possible cervical lymphadenopathy. Certain additional examinations were systematically requested: blood count, erythrocyte sedimentation rate (ESR), tuberculin test, and chest x-ray. A contrast-enhanced computed tomography (CT) scan was performed in retropharyngeal TB case. Magnetic resonance imaging (MRI) was performed for parotid TB. Chest Xray of the lungs was done in all cases. The diagnosis of extra-nodal TB was based on the pathological findings of the biopsy specimen taken from the different locations of tubercular after with highlighting a granulomatous infiltrate with or without caseous necrosis. No fine needle aspiration cytology (FNAC) was done. Clinical signs in addition to recovery under anti-tuberculosis treatment reinforced the positive diagnosis of TB.

**RESULTS:**

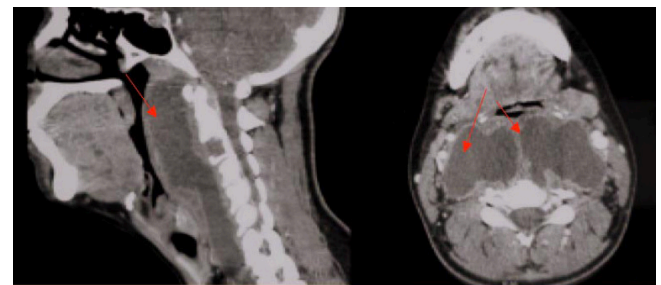
There were 5 male and 2 female patients aged between 15 and 45 years, with a mean age of 29 years. The sites of disease in the headandneck region were as follow: 2 in the tonsils, 2 in the nasopharynx, one in the pharyngo-larynx, one in the parotid gland and one in the retropharyngeal space. There was a family history of TB in two cases. The mean duration of symptoms was 2 months. The Clinical presentations varied according to the site of involvement (Table 1).

**Table 1: Clinical presentations per site of involvement**

Localisation	Nasopharynx (2 cases)	Tonsillar palatine (2cases)	Parotide (1case)	Pharyngolarynx (1 case)	Retropharyngeal abscess (Pott's disease 1 case)
Functional Signs	Epistaxis * 2	Odynophagia, dysphagia, high dysphagia	Cervical swelling	High dysphagia	Dysphagia
Physical examination	Bulged and irregular mucosa at the posterosuperior part * 2	Indurated right palatine tonsil (2 cases)	Firm parotid swelling	Ulceration at the level of the right epiglottic ary fold as well as at the level of the lateral and medial wall of the pyriform sinus	Asymmetrical bulging of the posterior wall of the oropharynx.
Biological inflammatory syndrome	-	+	+	+	+
Tuberculin Test	+	+	+	+	+
Testing for tuberculosis in sputum	-	-	-	+	-

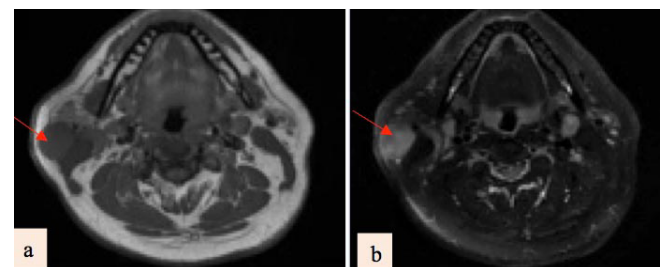
In nasopharyngeal TB, the patient consulted for unilateral epistaxis associated with ipsilateral nasal obstruction and diagnostic nasal endoscopy in both cases showed bulged and irregular mucosa at the posterosuperior part of the nasopharynx. Patients with pharyngo-laryngeal TB presented with chronic dysphonia and dysphagia and an ulcerative lesion over the vocal cords. Parotid gland TB presented with swelling of the parotid, with examination confirming a mass firm swelling, attached to the underlying tissue, without skin inflammation or facial palsy. One patient with cervical Pott's disease revealed by a retropharyngeal abscess presented with febrile

anterior displacement of the posterior pharyngeal wall with overlying congested mucosa, without imminent airway compromise. There was no trismus. A bilateral palpable, tender upper neck swelling of approximately 5 cm was found. Palpation of the cervical spine was very painful. Ultrasound of the neck was done in one case of parotid TB and showed a cystic mass of the right parotid gland. A contrast-enhanced computed tomography (CT) scan was performed in the case of retropharyngeal abscesses (RPA), showing a ring-enhancing lesion in the retropharyngeal space at the level of C3, suggestive of a RPA associated with marked erosion of the anterior arch of the third and seventh cervical vertebrae (Fig. 1).



**Figure.1:** A contrast-enhanced CT scan on admission, sagittal section, and axial section: massive abscess with ring enhancement in the retropharyngeal space (red arrow).

Only one patient underwent MRI (the case of parotid TB) which showed a cystic lesion in the superficial parotid gland. The lesion had low signal on T1-weighted image and high signal on T2-weighted image associated with inflammatory lymph nodes suggesting malignancy (Fig. 2).



**Figure. 2 (a):** MRI T1-weighted: mass in the right parotid gland with low signal, (b) MRI T2-weighted: parotid gland lesion with high signal (red arrows).

Biopsy and histopathological examination were done in 6 cases. Histopathology confirmed TB in all cases by demonstrating epithelioid granulomas with or without caseating necrosis. All patients underwent a complete pre-therapeutic evaluation and received antitubercular treatment. Four- drug regimen such as rifampicin, isoniazid, ethambutol, and pyrazinamide were given in the intensive phase for 2 months followed by isoniazid and rifampicin in the continuation phase for 6-8 months. Partial parotidectomy without sequalae was initially undergone for the case of parotid gland TB since MRI was suggestive of malignant tumour of superficial lobe for whom we did not a prior biopsy due to the risk of dissemination of malignant cells. Concerning the case



cervical Pott's disease caused by a RPA, the drainage of the abscess was performed through an intraoral vertical incision in the posterior pharyngeal wall. Specimens were taken to perform the Ziehl-Neelsen staining, the gram staining and a cytologic examination. The sputum culture was negative for *Mycobacterium tuberculosis* and diagnosis was established by a biopsy. Treatment associating four anti-drug regimen, for 2 months, followed by isoniazid and rifampicin for 10 months. The patient was followed also by an orthopedic doctor due to the vertebrae erosion. No surgical intervention was necessary and she was treated with immobilization using a neck collar. A long follow-up was necessary. A repeat CT of the neck; 18 months later; showed a complete disappearance of the RPA and the erosion of the anterior arch of C3. All other patients had favourable outcomes (Fig. 3) and none relapsed.



**Figure.3** (a): Indurated right palatine tonsil increased in size, before treatment, (b): Significant regression in the size of the right palatine tonsil after 5 months of treatment.

## DISCUSSION:

Tuberculosis is an infectious disease that remains a public health problem. Until the coronavirus (COVID-19) pandemic, tuberculosis was the leading cause of death ahead of HIV/AIDS [1]. Its overall incidence is projected to decline by 11% between 2015 and 2020, with an incidence rate at the national level varying from less than 5 to more than 500 new cases per 100,000 population per year[3]. Pulmonary TB is the most common presentation, accounting for 60-70% of cases [4,5]. Extrapulmonary localisation, seen in 20-30% of cases, is dominated by lymph node localization, observed in 10% of cases [4]. However, head and neck extra-nodal localisation of TB is very rare observed in almost 1,8% of cases [6].

Several routes of dissemination to ENT sites have been defined [7];

- The haematogenous route, most often from a pulmonary site.
- The lymphatic route from locoregional mucocutaneous involvement.
- The ductal route via bronchial sputum containing the bacilli, also called upward diffusion.
- The direct route from the external environment, this mechanism explains rare primitive forms.

These mechanisms of inoculation explain the topographical variety of lesions and the possibility of multiple location shapes

Nasopharyngeal TB is the most common according to the literature[7]. It is mainly observed in young males, has no specific linear presentation and it has a pseudotumoral appearance [8], with clinical signs similar to those of nasopharyngeal carcinoma [9]. Otolological, rhinological signs or cervical lymphadenopathy are most often observed and unilaterality is often the rule[8]. Our patients were male, presented with both unilateral epistaxis and hypoacusis in one case. The most common endoscopic appearance is a budding formation mainly posterior superior as observed in our 2 cases suggesting malignancy.

Tonsillar TB is an exceptional entity because of the antiseptic action of saliva and the innate resistance of the tonsils to *Mycobacterium tuberculosis* [10,11]. Clinically, it presents as tonsillar enlargement, sore throat, dysphagia, odynophagia, painful ulceration, white patches which may or may not associated with cervical lymphadenopathy [12]. Our patients presented with odynophagia, dysphagia, an indurated tonsil of increased size associated with a magma of ipsilateral adenopathy in a single case.

TB of the salivary gland is more often associated with pulmonary tuberculosis than with primary extrapulmonary TB [13]. The parotid gland is involved in 70 % of salivary glands TB [14]. Santosh Kumar Swain found one case among 12 cases of extra-nodal TB equivalent to 8 % [15]. It may be revealed as nodular or diffuse, with acute or chronic onset, without specific symptoms [14]. MRI, CT and cervical ultrasound are not specific for parotid TB and are suggestive of malignancy in most cases which was in accordance with our case of parotid gland TB[14]. The presence of necrosis in TB reduces the contribution of FNAC, but incisional biopsy is contraindicated because of cutaneous fistula formation, which is difficult to heal[14]. Our case underwent partial parotidectomy, since MRI was suggestive of malignant tumour.

Primary pharyngo-laryngeal TB is extremely rare, even in endemic areas [12]. It is more often seen as a dissemination of pulmonary TB, found in 15 to 37% of cases of pulmonary TB, but rarely as a primitive one [15]. It is observed in two peaks, at 30 and 60 years of age; our patient was 32 years old. Confirmation requires direct sputum microscopy, molecular biological techniques and/or histological analysis. Imaging investigations are valuable in precisising the sites of involvement, pattern and extent of disease. It may endanger the vital prognosis in the face of possible upper airway obstruction, despite preservation of architecture of the pharyngolarynx [10]. Our case was presented with chronic dysphonia and we found ulceration at the level of the right epiglottic ary fold as well as at the level of the lateral and medial wall of the pyriform sinus at examination.

Tuberculous involvement of the retropharyngeal space is exceptional [15], usually due to spinal tuberculosis [15]. TB infection extends through the intervertebral discs to multiple vertebrae and soft tissues, forming an abscess [3]. Symptoms are not specific. Diagnosis is based on



radiological and bacteriological assessment. Treatment implicates a multidisciplinary team, starting with the evacuation of the collection, then anti-tuberculosis chemotherapy[3]. Concerning the duration, a regimen of 6-9 months of isoniazid and rifampicin, supplemented in the first 2 months with pyrazinamide and ethambutol is recommended, but in cases with multiple vertebral involvement, neurological involvement or cervical lesions, a duration of 9-12 months is recommended [16]. Our case underwent RPA drainage followed by anti-tuberculosis treatment for 12 months.

Other sites of TB have been described in the literature:

- Thyroid TB, seen in 0,5%-1,15% of TB of head and neck, is often secondary to a haematogenous dissemination of the germ[7].
- However, nasal and sinus cavity TB remains a rare entity, estimated at 1% of TB of head and neck. The cartilaginous portion of the nasal septum and the turbinates are the most interested sites [7].
- Auricular TB also remains a rare entity, representing 0.4% of otitis media according to Awan 1983[6], the latest case being described by Santosh Kumar Swain et al in 2020. The diagnostic difficulty lies in the fact that it presents like other suppurative otitis media[7].

The intradermal effect of tuberculin is not always positive [7]. All our patients benefited from it and it was positive in all cases. The certainty of TB in ENT all sites is histological and/or bacteriological[6]. However, histology can provide formal proof within a reasonable time, unlike bacteriology whose result (culture) can require several months. In fact, it reveals the presence of epithelial-

gigantocellular foci with caseous necrosis. PCR is not common exam, but is often requested in case of high clinical suspicion of TB with negative cultures [2]. In our serie, the diagnosis was confirmed by histology in all our patients and the biopsy was sufficient for a positive diagnosis in most cases collected, allowing us to start treatment without waiting for culture results.

According to the World Health Organisation (WHO) guidelines, extrapulmonary TB should be treated with four drug regimen for the first 2 months, followed by a two-drug regimen for the next 4 months, based mainly on isoniazid, rifampicin, pyrazinamide and streptomycin, currently replaced by ethambutol [1]. Extrapulmonary TB is mainly treated medically, surgery is usually necessary in order to establish a positive diagnosis and initiate treatment[15]. All our patients received anti-tuberculosis treatment according the diagram described in the guidelines. One case has undergone RPA drainage and one case a total parotidectomy prior to diagnosis of TB.

## CONCLUSION:

Extra-nodal TB of the ENT sphere is a rare pathology. Clinically it is difficult to diagnose with neoplastic pathology because there are no pathognomonic signs of this disease. It is important to mention TB as a differential diagnosis in head and neck malignancies. The diagnosis is essentially histopathological. Early diagnosis and treatment which is based on anti-tuberculosis drugs may afford favourable outcomes.

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