

Original Research Article**TUBERCULOSIS IN THE HEAD AND NECK REGION: EXPERIENCE IN THE EASTERN TERTIARY CARE CENTRE OF NEPAL****Abstract:**

Introduction: Tuberculosis (TB) primarily affects lungs, however extra pulmonary tuberculosis (EPTB) is also common, especially in high disease load areas and mainly manifests in head and neck region.

Objective: To study the different otorhinolaryngological manifestations of tuberculosis in terms of presentation, disease process, treatment and outcome in eastern tertiary care centre of Nepal and to study its coexistence with pulmonary tuberculosis and human immunodeficiency virus infection.

Methods: It is a retrospective study conducted in the otolaryngology and head and neck surgery department of B.P.Koirala Institute of Health Sciences, Nepal. The study group comprised 85 patients diagnosed with tuberculous manifestations of the head and neck region over the period of 2 years from 2012-2014. Records of patients diagnosed and treated for TB in the head and neck region at our institute for two year period were analysed for presenting complaints, examination findings, diagnostic features, treatment modes and outcome. Chest radiography and sputum AFB was also done in all the patients to rule out coexisting pulmonary tuberculosis. All patients were screened for HIV.

Results: 85 cases showed extrapulmonary otorhinolaryngological manifestations of tuberculosis. Majority of the cases were male and in the third decade of life. Commonest manifestation was cervical lymphadenopathy. Fine needle aspiration cytology (FNAC), histopathological diagnosis and Acid Fast Bacilli (AFB) staining were used to confirm the diagnosis. All patients were treated with category I anti TB treatment (AKT) in the DOTS (Direct Observed Treatment Shortcourse) clinic which achieved cure in all cases.

Conclusion: Tuberculosis of the head and neck region though not very frequent, still remains an important clinical entity which should be kept in mind especially in developing countries. High degree of suspicion is necessary to reach diagnosis. Category I AKT is effective for treatment.

Keywords: *Tuberculosis, Cervical lymphadenopathy, Acid Fast Bacilli (AFB), Fine Needle Aspiration Cytology(FNAC)*

INTRODUCTION

As per WHO data there were nearly nine million new cases of Tuberculosis in 2011 and 1.4 million tuberculosis related deaths (990,000 among Human Immunodeficiency Virus(HIV) negative people and 430,000 TB deaths associated with HIV). The disease is more common in males affection mostly adults of economically productive age groups. Most of the cases are seen in Asia (59%) and Africa(26%). Small percentage of cases are seen in Eastern Mediterranean Region (7.7%), Europe (4.3%) and the Americas (3%).¹ As per WHO data the largest series of new TB cases was reported from South East Asia region. Tuberculosis is still considered as an excretion because of increasing reports of drug resistance of tubercle bacilli and wide prevalence of HIV infection.²

Tuberculosis has been a curse for mankind. In spite of effective free drug treatment under DOTS (Directly Observed Treatment Shortcourse) and government policy, a huge number of morbidity and mortality occurs in countries like Nepal where the load of the disease is high. According to WHO report of 2013, the prevalence of tuberculosis in Nepal is 66,000 per year (241/1,00,000) and incidence is 45,000 per year (163/1,00,000). The prevalence of HIV in Nepal is 0.3% and the prevalence of HIV infection among tuberculosis patients is 2.4%.³ The lung is the most common organ affected but no part of the body is immune to this condition. A large proportion of extra pulmonary tuberculosis (TB) occurs in the ear, nose and throat and head and neck region in the form of cervical lymphadenopathy, otitis media, laryngitis, pharyngitis and nasal TB. Atypical manifestation of tuberculosis may lead to diagnostic dilemma which lead to delayed diagnosis and sometimes wrong treatment plans. Hence it is very important that in countries like Nepal where there is a high disease load, the medical practitioner should be well versed about the extra pulmonary manifestations of tuberculosis, should confirm the diagnosis by either sputum test, FNAC, or histopathology whichever is appropriate and initiate proper treatment at the earliest.⁴

MATERIALS AND METHODS

Records of all patients registered at the DOTS (Direct Observed Treatment, Short Course) center at our institute during the period April 2012 to June, 2014 were studied. All cases with TB in ENT region were considered for the study. Details regarding demographic data, presenting complaints, examination findings, investigation reports, treatment given and outcome were recorded. All data were collected, tabulated and analysed.

Both informed and written consent were taken from the patient who were participating in the study.

Diagnosis of tuberculosis was based on the following clinical features.

Laryngeal Tuberculosis: The patient with laryngeal tuberculosis typically presents with hoarseness of voice, dysphagia and stridor along with loss of weight and appetite. The fiberoptic laryngoscopic examination shows pale granulation tissue and erythema mostly in the glottis region. Then biopsy is taken under general anaesthesia and the tissue is sent for histopathological examination, mycobacterial culture and staining and susceptibility testing.

Tuberculosis of the Ear: The patient presents with persistent otorrhoea not responding to antibiotics, hearing loss and sometimes facial palsy. Otoscopic examination reveals multiple perforation of the drum with pale granulation tissue. Acid fast bacillus staining of the discharge confirms the diagnosis.

Tuberculosis of the Nose and Paranasal Sinus: The patient presents with nasal obstruction and blood stained discharge. On examination granular lesions in the nose and nasopharynx can be seen. Histopathology examination and mycobacterial culture and susceptibility testing helps in establishing the diagnosis and management.

Tuberculosis of Neck Nodes: Any non-tender cervical lymph nodes not responding to conservative antibiotic treatment for 2 weeks was sent for fine needle aspiration cytology which shows whether the

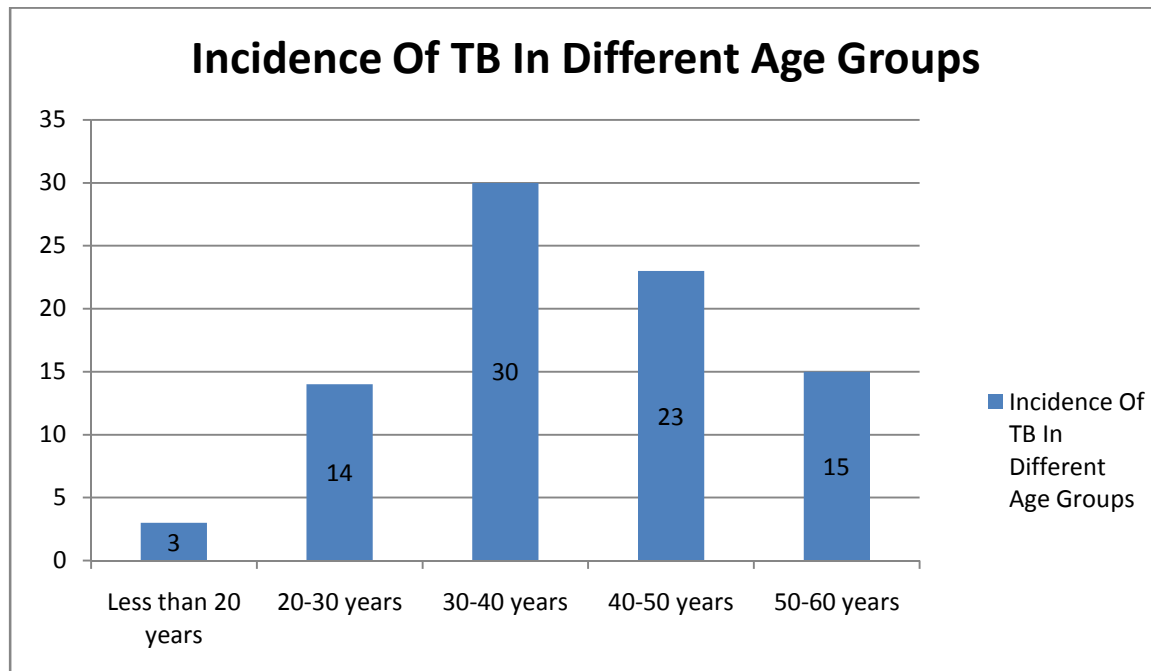
patient has cervical lymph node tuberculosis or not. If the fine needle aspiration report is inconclusive then biopsy of the lymph node was taken to establish the diagnosis.

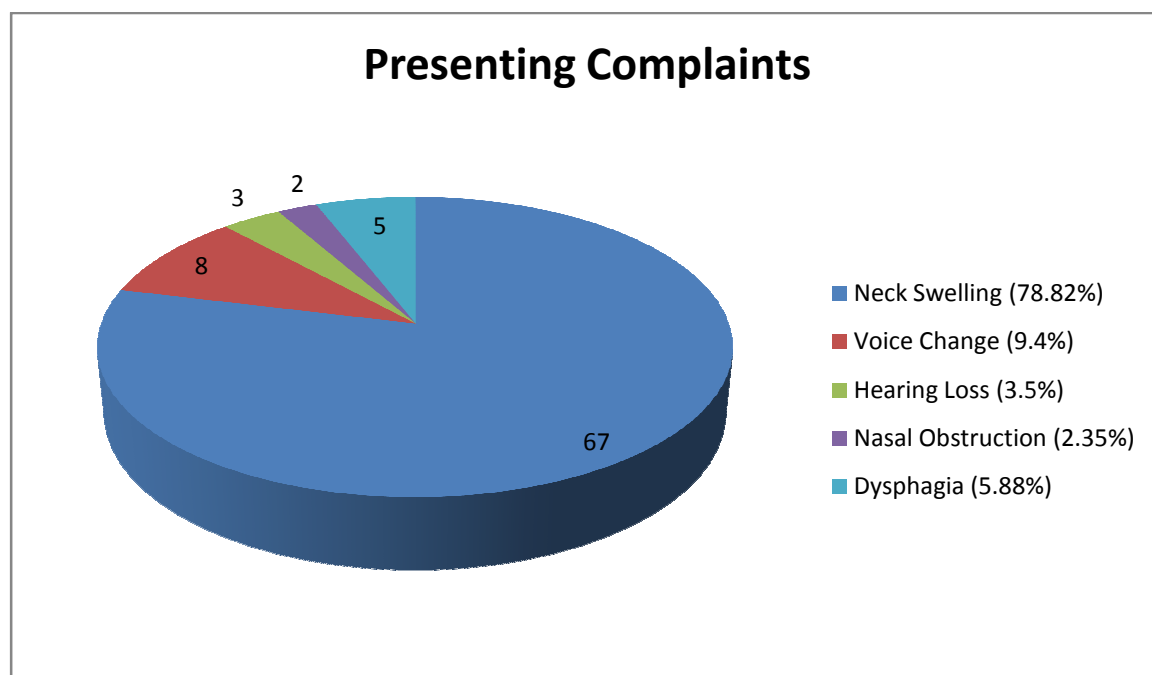
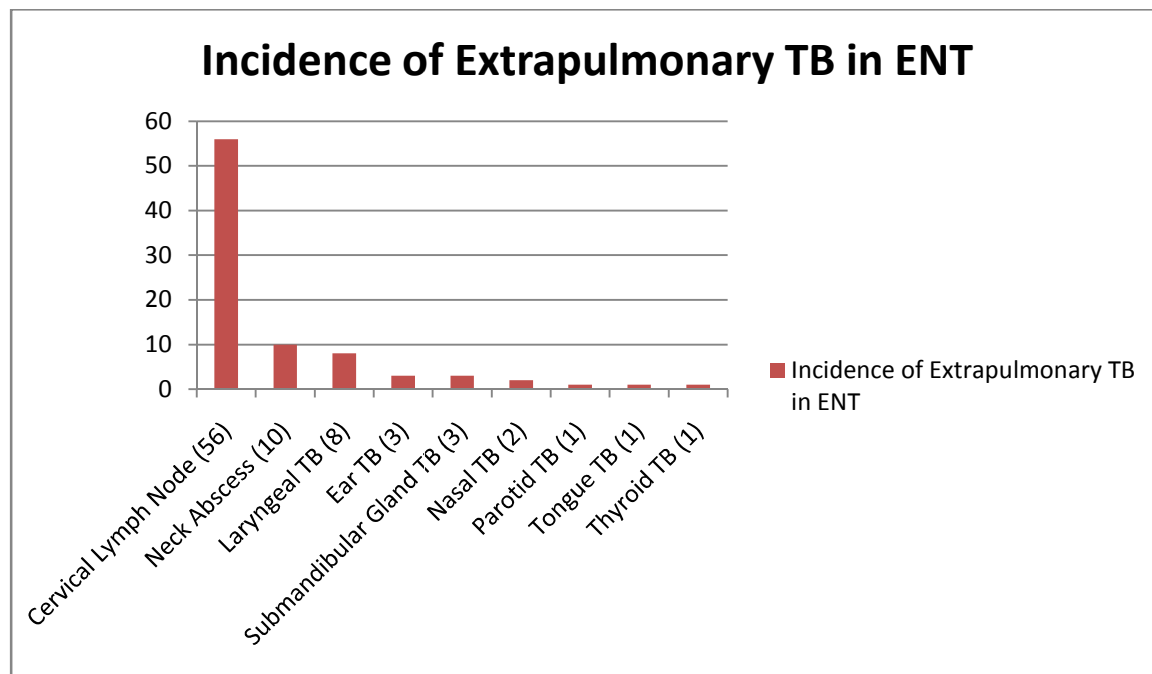
Laboratory Diagnosis. Tissue samples were sent for laboratory investigations to both the Histopathology Laboratory and the Microbiology Laboratory for mycobacterial smear and culture. Concurrent pulmonary tuberculosis was ruled out by sending 3 consecutive sputum samples for mycobacterial smear. Chest radiography was also done in all patients to rule out coexisting pulmonary tuberculosis. All patients were screened for HIV.

Data was analysed using Fishers exact test and p value less than 0.05 is considered as significant.

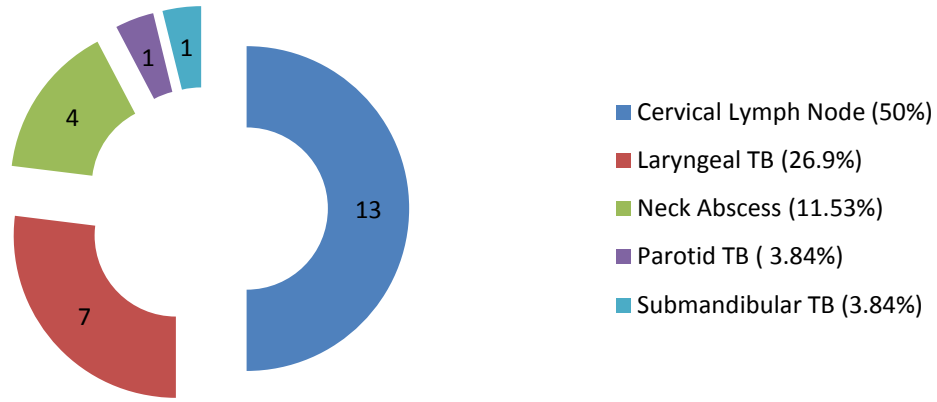
RESULTS

The study includes 85 cases with tuberculosis of the head and neck region. 60 patients (70%) were males and 25 (30%) were females. The age group of the patients ranged from 14 to 65 years. The most common age group was of 31-40 years. The most common localization of tuberculosis in the head and neck region was observed to be cervical lymph nodes (65.88%) followed by deep neck space abscess (11.76%). The most common presentation was neck swelling seen in 65 patients (78.82%). 13 patients (15.29%) had coexisting HIV infection and 26 patients (30.59%) had associated pulmonary tuberculosis.

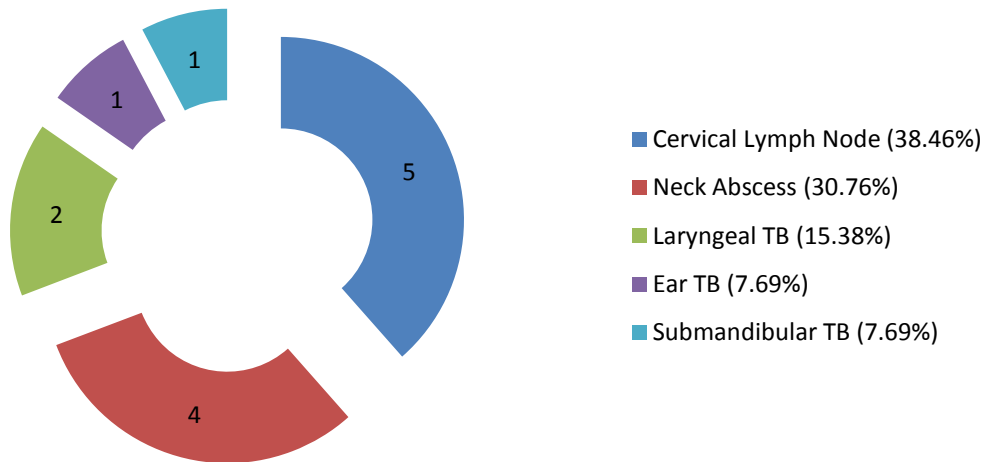




Incidence of Co-Existing Pulmonary TB (Total=26)



Incidence of Co-Existing HIV (Total=13)



Tubercular Lymphadenitis

Out of 85 patients, 56 patients were diagnosed as having tuberculous lymphadenitis (65.88%). Among these, 38 patients were males and 18 were females. 40 patients had discrete cervical node swelling, 15 patients presented with matting of the lymph nodes and 1 patient with ulceration and discharge. The most commonly involved lymph node group was the level 2 cervical. 13 patients were diagnosed as having co-existing pulmonary tuberculosis diagnosed with chest radiography and sputum examination for AFB. The incidence of coexisting pulmonary tuberculosis and TB lymphadenitis (13/56=0.232) and TB lymphadenitis alone (43/56=0.767) is statistically significant (p value<0.001). 5 patients were diagnosed as HIV positive. The incidence of coexisting HIV and TB lymphadenitis (5/56=0.089) and TB lymphadenitis alone (51/56=0.91) is statistically significant (p value<0.001). Fine needle aspiration cytology was performed in all cases. In 10 patients FNAC report came as non-specific lymphadenitis, these patients were started on antibiotic course and were followed after two weeks to see the size of the node, those cases that did not respond with antibiotic therapy excision biopsy was performed. Their biopsy report came tuberculous lymphadenitis. All patients were started on anti-tubercular therapy in DOTS clinic.

Deep Neck Space Abscess

10 patients were diagnosed as having tubercular deep neck space abscess. Among these 4 was submandibular abscess, 3 were retropharyngeal space abscess, 1 was parapharyngeal space abscess, 1 was suprasternal abscess and 1 was submental space abscess. 6 were males and 4 were females. 4 patients presented with dysphagia and 6 patients with neck swelling. 4 patients of deep neck space abscess were HIV positive, p value<0.001, significant. 4 patients of deep neck space abscess had co-existing pulmonary tuberculosis, p value<0.001, significant. All patients underwent serial aspiration of abscess followed by anti- tubercular therapy.



23 year old male with Supraternal Abscess TB



62 year old female with Tuberculous Neck Abscess

Tubercular Laryngitis

Of the 85 cases, 8 cases (9.41%) had tubercular laryngitis. All patients were male. 7 patients had co-existing pulmonary tuberculosis. These patients presented with hoarseness of voice ranging from vocal fatigue to complete aphonia. True vocal folds were involved in 6 cases and 2 patients interarytenoid region was involved. 2 patient was HIV positive. All patients were started on antitubercular therapy.

Salivary Gland Tuberculosis

Of the 85 cases, 4 cases had salivary gland tuberculosis, 3 in submandibular gland and 1 in parotid gland. All were males. They presented with neck swelling associated with pain. Ultrasonography of the neck was done for submandibular neck swelling and CT scan was done for parotid swelling. FNAC of the swelling was done which showed TB. All patients were started on antitubercular therapy.



18 year old female with Parotid TB

Ear Tuberculosis

Of the 85 cases, 3 cases had tuberculosis of the ear. Two patients had disease in the bilateral ear and one patient had disease in the unilateral ear. Two patients were male and one was female. All patients had severe hearing loss. The tympanic membrane showed multiple perforations with pale granulation tissue. All patients had scanty ear discharge. None of the patient had facial nerve palsy. AFB staining of the discharge showed tubercle bacilli. All patients were started on anti-tubercular therapy.

Nose Tuberculosis

Two patients had nasal tuberculosis. Both patients were female. Both patients presented with bilateral nasal obstruction. There was no history of nasal discharge nor epistaxis. On examination pinkish friable mass was seen in the nasal cavity. Histopathology of the mass revealed tuberculosis. Both patients were started on anti-tubercular therapy.



35 yr old male with nasal tuberculosis

Tongue Tuberculosis

One patient had tuberculosis of the tongue. The patient was male. The patient presented with dysphagia. On examination, a mass was seen on the base of tongue. Histopathology revealed tuberculosis. The patient was started on anti-tubercular therapy.

Thyroid Tuberculosis

One patient had tuberculosis of the thyroid gland. The patient was male. The patient presented with fluctuant swelling in the anterior neck. Ultrasound of the neck showed thyroid abscess. AFB staining of the neck showed tubercle bacilli. Serial aspiration of the abscess was done and the patient was started on anti-tubercular therapy.

DISCUSSION

Primarily tuberculosis is the disease of the lungs, but it can be seen in the head and neck region also, especially in the developing countries. Unrecognized, neglected and delayed treatment is an epidemiological threat. So a high index of suspicion is required for the diagnosis of the head and neck tuberculosis especially in the developing countries.

In the present study, for the whole group the male to female ratio was 2.4:1; when the male to female ratio in each group was analysed, this ratio was further higher in tuberculous lymphadenitis, laryngeal tuberculosis and submandibular tuberculosis. This was in contrast to observations by K. Akbar khan et al., where tuberculous involvement of the cervical lymph node was seen more in females.⁵ In our opinion this is due to additional risk factors like smoking and alcohol abuse, both of which are more prevalent in men in Nepal. For all the patients, the mean time that had elapsed between the onset of symptoms and hospitalization was 4 weeks and it was longest in the group of tuberculous lymphadenitis.

Tuberculous involvement of the cervical lymph nodes was found to be the commonest site. Most of the cases presented as a non-tender, small to moderate size, firm mass on the neck. Majority of these patients (98%) had unilateral disease with single group of lymph node involved; most commonly the deep jugular lymph nodes. In the present study, the posterior triangle cervical lymph nodes is also the common site of involvement for tuberculosis infection; according to Antoni et al., posterior triangle cervical lymph nodes is not the common localization for tuberculosis, as no case of posterior lymph node tuberculosis was seen.⁶

Fine needle aspiration cytology (FNAC) is an effective way to diagnose tuberculous lymphadenitis. In the present study FNAC could diagnose 88.24% of patients of tuberculous lymphadenitis; in the rest, FNAC report came as non-specific reactive lymphadenitis, these patients were started with course of antibiotic and were followed after 2 weeks to see the size of the node; those cases that did not respond with antibiotic course, excision biopsy was done and histopathology report suggestive of tuberculosis. For this reason similar to other studies like Maharajan et al., that excision biopsy is the most reliable and confirmatory method for the diagnosis of the tuberculous lymphadenopathy.⁷

The second common localization of head and neck tuberculosis in our study was deep neck abscess; but according to Choudhury et al., laryngeal tuberculosis is the second common localization followed by deep neck space abscess.⁸ Deep neck space abscess can possibly lead to airway obstruction, spread in to mediastinum, involvement of carotid sheath, septic shock. The mortality rate of patients with such life threatening complications is as high as 40-50%. Early diagnosis is crucial to prevent these life threatening complications.

Tuberculous retropharyngeal abscess is often secondary to tuberculosis of the cervical spine.⁹ In the present study 3 patients had retropharyngeal abscess. Contrast enhanced computed tomography was done which showed central low density area with peripheral ring enhancement indicating the presence of abscess. All patients underwent intraoral drainage.

According to Agarwal and Bais the greatest incidence of laryngeal tuberculosis is in young adults between 20 to 30 years of age;¹⁰ however in this study all laryngeal tuberculosis patients were in the age group of fourth and fifth decade. Laryngeal tuberculosis is common in males in our study, similar to the

study of Yvette et al. It was believed that laryngeal tuberculosis affects posterior part of the larynx (interarytenoid area); this was thought to be due to pooling of infected sputum in the posterior part of the larynx in recumbent position.¹¹ In this study vocal cords were most commonly affected followed by interarytenoid area. In our study, among the 8 cases of laryngeal tuberculosis, 7 patients had co-existing pulmonary tuberculosis (87.5%), which is statistically significant. This suggests that laryngeal tuberculosis usually occurs secondary to pulmonary tuberculosis which is in contrast to the study done by Yvette et al. Among 8 patients of laryngeal tuberculosis, 2 patients were positive for HIV. But according to Antoni et al., laryngeal tuberculosis is more common in immunocompromised patients.⁶

Tuberculosis of the salivary gland is common in low socioeconomic group, immunocompromised, malnourished and in endemic area. In present study all patients of salivary gland tuberculosis, presented with complaints of swelling in the neck. Surgery should be avoided in cases of swellings suspicious for tuberculosis. FNAC was done which confirmed the diagnosis.¹²

Aural tuberculosis typically presents with painless otorrhea, pale granulation tissue, and profound hearing loss disproportional to symptoms. It usually affects children and young adults.

CONCLUSION

Tuberculosis can have atypical presentations in an endemic country like Nepal and the diagnosis can be extremely challenging without pulmonary involvement. However with a strong clinical suspicion and careful systematic investigations we can avoid unnecessary delay in diagnosis and intervention.

REFERENCES

1. World Health Organization. Global Tuberculosis Control Report 2012.
2. Johnson R, Streicher EM, Louw GE, Warren RM, Van Helden PD, Victor TC. Drug resistance in M. tuberculosis. Understanding the mechanisms of drug resistance in enhancing rapid molecular detection of drug resistance in Mycobacterium tuberculosis. 2007 Dec;7.
3. Epidemiology of Tuberculosis in Nepal. National Tuberculosis Programme-Annual Report. 2013;4-6.
4. de Sousa RT, Briglia MFS, de Lima LCN, de Carvalho RS, Teixeira ML, Marcia~o AHR. Frequency of Otorhinolaryngologies' manifestations in patients with pulmonary tuberculosis. Int Arch Otorhinolaryngol. 2010;14(2):156–162.
5. Akbar Khan K, Nazir Ahmed Khan, Mohammed Maqbool. Otorhinolaryngological manifestation of tuberculosis. JK Science Journal of Medical Education and Research. 2002;4(3):115-118
6. Bruzgielewicz A, Rzepakowska A, Osuch-Wójcikewicz E, Niemczyk K, Chmielewski R. Tuberculosis of the head and neck—epidemiological and clinical presentation. Arch Med Sci. 2013;346.
7. Maharajan M, Hiranchan S, Kafle PK, Bista M, Shrestha S, et al. Incidence of tuberculosis in enlarged neck nodes, our experience. Kathmandu University Medical Journal. 2009;25:54-58.
8. Choudhury N, Bruch G, Kothari P, Rao G, Simo R. 4 years' experience of head and neck tuberculosis in a south London hospital. J R Soc Med. 2005; 98: 267-269.
9. Singh J, Velankar H, Shinde D, Chordia N, Budhwani S. Retropharyngeal cold abscess without Pott's spine. S Afr J Surg. 2012; 50: 137-139.

10. Agarwal P, Bais AS A clinical and videostroboscopic evaluation of laryngeal tuberculosis. J Laryngol Otol.1998;112: 45-48.
11. Kakar PK, Singh IKK, Lahiri AK. Laryngeal tuberculosis. Ind J Otolaryngol.1971;23: 70.
12. Lau SK, Wei WI, Hsu C, Engzell UC Efficacy of fine needle aspiration cytology in the diagnosis of tuberculous cervical lymphadenopathy. J Laryngol Otol. 1990;104: 24-27.