

Acute tuberculous mastoiditis

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Abstract

Tuberculosis is one of the commonest infectious diseases of developing countries including Nepal, affecting almost all the vital organs of human body. Here an unusual case of tuberculosis of temporal bone has been presented. A 26-year old lady presenting with features of acute mastoiditis was managed surgically. All the investigations including histopathological examination were negative for tuberculosis, but in the end she responded only to anti tuberculous therapy (ATT) with complete resolution of her symptoms.

Keywords: Tuberculosis (TB); mastoiditis; granulations; antituberculous therapy; sequestra; mastoidectomy.

Introduction

Tuberculosis is one of the commonest chronic infectious diseases of developing countries, affecting not only lungs and intestine, but also most of the organs of the human body. WHO reported it as "the most important specific communicable disease in the world". It is, by far, the largest single cause of death in developing countries. In Nepal, at present, according to the results of TB surveys, carried out by National Tuberculosis Centre (NTC) in cooperation with the Japanese expert team, annual risk of tuberculosis infection is estimated at 2.2% on an average. Moreover, it is worth to mention that about 75% of tuberculosis patients fall in the economically productive age group namely 20-54 years.¹

Mills RP in his study mentioned that the incidence of tuberculous otitis media has fallen dramatically since the beginning of this century. At that time 3-5% of cases of otitis media were due to tubercle bacillus, whereas today the condition is rare.² Likewise, Turner and Fraser in a study reported in 1915 stated that 2.8% of all cases of suppurative otitis media were due to tuberculosis.³ It is true that the incidence of tuberculous otitis media has fallen dramatically in the developed countries, but it is still a dreadful disease in underdeveloped countries.

Primary tuberculosis of the ear is extremely rare. Tuberculosis involving tympanic membrane is usually secondary to pulmonary tuberculosis, spreading through the eustachian tube, most often by the forceful expulsion of haemoptysis and infected blood into the tympanum. The condition usually begins as an apparent serous otitis media.⁴

It should be noted that tuberculous infection giving rise to chronic granulomatous disease of the tubotympanic cleft is more common than is generally thought and should be sought routinely in secretions and biopsy specimens in places where the incidence of tuberculosis is high.⁵ The typical clinical features are painless otorrhoea, which fails to respond to the usual antimicrobial treatment, in a patient with evidence of tubercle infection elsewhere. Pale exuberant granulations are present and the hearing loss tends to be greater than might otherwise be expected.⁶

Complications include facial palsy, mastoiditis, sensory neural hearing loss and labyrinthitis. In some cases there maybe multiple perforations of the tympanic membrane.⁷ The diagnosis of tuberculous otitis media is based on demonstration of acid fast bacilli within granuloma in biopsy materials, with or without the culture of mycobacterium tuberculosis from the biopsy, aural drainage or aspirate of the middle ear fluid.⁸ The treatment consists of systemic antituberculous chemotherapy usually with multiple agents to avoid resistance.⁹ Surgery maybe required in some cases to remove sequestra and improve drainage. When surgery is combined with adequate chemotherapy, there is a good chance of healing with a dry ear with good prognosis.¹⁰

Case Report

A 26-year old female from Southern Nepal presented with chief complaints of pain and swelling over the right postauricular region for the past 9 days. She also gave history of blood-stained discharge from her right ear for the past four years. The discharge was continuous, scanty, purulent and usually blood stained. She had undergone excision of granulation tissue from the same ear 3 months back somewhere outside. Her personal and family history was not significant. She did not have any history suggestive of tuberculosis.

On examination, the patient was of average built and nutrition, afebrile but looked pale. ENT examination revealed diffused, tender, partly fluctuating and inflamed swelling over the right post auricular region with anteriorly displaced pinna. Tympanic membrane could not be evaluated because the external auditory canal was full of granulation tissue. The left ear was normal. Rinne was false positive on the diseased side and Weber test was lateralised to the normal side. Her facial nerve was intact and there was no nystagmus. Her systemic examination revealed no abnormality.

Roentgenogram of the right mastoids showed extensive bony erosion with cavitation (*temporal bone was almost totally eroded except the tympanic ring*). Routine examination of urine and blood was normal except low haemoglobin level (7.9 gm%) and raised ESR (47mm/hr). X-ray of the chest was normal. Pure tone audiogram showed right-sided profound sensory neural hearing loss.

On the basis of the presenting history, clinical findings and investigation reports, diagnosis was made as right-sided Chronic Suppurative Otitis Media Attico-Antral type (CSOM-AA) with mastoid abscess and was planned for emergency mastoid exploration under general anaesthesia.

Under general anaesthesia, the right-sided mastoid was explored by circumferential approach. The mastoid cortex was totally eroded and the mastoid bowl was filled with granulations. Multiple bony sequestra with necrotic tissue and extensive granulations were found almost all over the temporal bone. Landmark identification was very difficult due to excessive granulations. Granulations and bony sequestrae were removed as much as possible. Temporal bone was totally eroded except the labyrinthine part and inferior part of the tympani annulus. Lateral sinus, posterior and middle cranial fossa dura, facial nerve and jugular bulb were exposed. Excised granulation tissue was sent for histopathological examination and wound was closed two layers after loose packing of the mastoid cavity with antibiotic and steroid smeared ribbon gauze. Postoperative recovery was uneventful. Stitches were removed on the sixth postoperative day and ear pack was removed on the tenth postoperative day.

The granulation tissue specimen sent for histopathology was "chronic inflammation with dysplastic and pleomorphic cells". The pathologist also advised the need for close follow-up. As residual granulations were there in the mastoid cavity, around the vital structures, repeated steroid packing was done to control the granulations. But granulation continued to grow up and almost filled the whole of mastoid bowl within three weeks. Considering her socioeconomic status, continuous growth of granulations despite steroid packing and oral antibiotic, and presence of multiple sequestra, anti-tuberculous therapy was started as therapeutic trial. Within fifteen days of starting ATT, granulations subsided. ATT was continued for 9 months. The granulations totally disappeared leading to a dry mastoid cavity with epithelial lining. Till the last follow-up (23 months after surgery) the ear was absolutely dry without any recurrence of the disease.

Discussion

Sukchnet has described tuberculosis of the middle ear and mastoid in adults as a chronic disease which usually has an insidious and painless onset and proceeds on a chronic course.¹¹ Tuberculous infection should be considered when chronic otorrhoea occurs in recent immigrants from areas with high rate of infection.¹² When otitis occurs as the only apparent focus of tuberculous infection, the disease is usually due to ingestion of infected cow's milk.¹³ Mastoiditis is a frequent complication.¹⁴

Proctor and Windsay (1942) in a clinical study of temporal bones of eight cases, found strong evidence that tubercle bacilli reached the ear by the haematogenous route. Any caseous focus maybe a source from which tubercle bacilli enter the blood stream to reach the temporal bone. In our patient, there is also a strong possibility of haematogenous spread from the primary focus, which we could not detect during our clinical examination.¹⁵

In the majority of cases, the clinical manifestations are those of chronic, insidious inflammatory process. In the minority of patients, the disease may present as an acute otitis. Despite the tissue destruction that may accompany tuberculous otitis, pain is minimal or absent in the majority of patients in most series.¹⁶

Orval E Brown *et al* in their series have mentioned that pain is rarely noticed, and the proportions seem to enlarge in the face of ordinary medical therapy such as aural hygiene and instillation of topical medication. The tympanic membrane becomes thickened and pale and sometimes bulges. There maybe multiple perforations in the early stages, but they coalesce into a total tympanic membrane perforation accompanied by pale granulation tissue. Loss of ossicular mass often produces a greater conductive hearing loss than expected from the perforation alone. Diagnosis is confirmed by cultures.¹⁷

In a significant proportion of cases, the typical picture is not seen. There maybe otalgia with otorrhoea and there may not be any evidence of tuberculosis elsewhere.¹⁸ A facial palsy may develop but appears to be more common in those cases of acute mastoiditis caused by mycobacterium tuberculosis occurring in 40% in one series.¹⁹ Commonly, there is a severe depression of hearing due to early labyrinthine involvement, much out of proportion to the other symptoms and findings and is good due to the diagnosis.

In advanced cases there is carries and necrosis of the boney labyrinthine capsule.²⁰ The findings at operation - enlarged caseous glands, presence of necrosed bone, pale flabby granulation, putty- like pus in tympanic antrum, extensive carries of the bone and necrosis of the labyrinthine wall.²¹

In this case no primary focus in any other part of her body could be found. Even though the disease was not confirmed histopathologically, the clinical features, nature of presentation and the pre-operative findings were typical of tuberculosis except that facial nerve was intact despite such extensive disease.

Conclusion

Diagnosis of tuberculous otitis media always may not be supported by histopathology due to various reasons. Hence in underdeveloped countries any case of chronic otitis media should always be looked upon with suspicion and tuberculosis should always be kept in mind. Most of the time the nature of presentation, exuberant granulations and unresponsiveness to the regular management lead us to think in the line of an atypical case of tuberculous otitis media.

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