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Tuberculous otitis media in an adult in a primary care setting: A case report

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ABSTRACT

Tuberculous otitis media is a rare disease, hence not often considered in the differential diagnosis of otorrhea. This results in late diagnosis with resulting complications such as irreversible hearing loss. A case report with review of the literature is presented, emphasizing that tuberculosis should be considered in the differential diagnosis of otorrhea not responding to commonly prescribed antibiotics. We also emphasize the importance of awareness creation in the management of such a disease, involving family members to oversee treatment and also research on ways of shortening duration of treatment to avoid default in treatment.

1. Introduction

Tuberculosis (TB) has been present in man since antiquity. Despite the tremendous advances made in its treatment and prevention, it continues to be a major cause of disability and death in low-income and middle-income countries[1]. In 2007, an estimated 13.7 million people had active TB disease, with 9.3 million new cases and 1.8 million deaths. The annual incidence rate varied from 363 per 100 000 in Africa to 32 per 100 000 in the Americas[1]. The disease burden is greatest in 22 countries(mostly in Sub-Saharan Africa and South-East Asia) which collectively bear 80% of the global burden of TB[1]. In these countries about 80% of the population test positive to the tuberculin test while only 5-10% test positive in America[2]. It is the second cause of death worldwide after HIV/AIDS hence in 1993, the World Health Organization (WHO) declared TB a global health emergency[1]. Nigeria ranks fifth among the 22 countries with high TB burden[3].

Tuberculosis is classified as pulmonary and extra-pulmonary of which the former is the most common presentation accounting for more than 80 percent of cases[4]. About 50% of tuberculous HIV positive patients develop extra-pulmonary disease and is usually associated with increased morbidity and mortality[4-6].

A rare form of extra-pulmonary disease is TB otitis media[7]. In a 16-year period, 1959-1975, there were only 24 cases seen in the University College Hospital Ibadan, Nigeria out of which 75% of these cases occur in the paediatric age group[8]. In the south eastern part of Nigeria only three cases of tuberculous otitis media were reported among 1 200 patients with chronic suppurative otitis media[9].

Due to its rarity, its diagnosis requires a high index of suspicion before the onset of complications[7]. We report the case of a 26-year old Nigerian male who presented to Eku Baptist Hospital, Delta State of Nigeria with chronic discharging ear which was later diagnosed as tuberculous otitis media.

2. Case report

This article was written after consent was obtained from the patient.

A 26-year old Nigerian male trader on plastic wares

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presented to the out-patient clinic of Eku Baptist Hospital with a 4-month history of bilateral ear discharge with difficulty in hearing. This started initially with discomfort which was followed one week later with a mucoid discharge and poor hearing. He became very worried about his hearing loss because his customers in the market had to be shouting before he could hear. He was not married and was living alone. There was no history of catarrh but there was occasional cough productive of scanty sputum. There was no associated chest pain or night sweats. He neither had smoked cigarettes nor drank alcohol. There was no loss of weight and his appetite was good. He had visited patent medicine shops and private clinics and was given different kinds of capsules and ear drops which brought no relief.

His systemic review showed nothing of significance.

On examination, he was healthy looking, not pale, anicteric and afebrile (Temp 37.5 ℃). His pulse rate was 76 beats per minute, regular and of good volume. His blood pressure was 90/60 mmHg. The heart sounds were normal. The chest examination showed nothing of significance. There was no abnormality noticed on abdominal examination.

Examination of the ears showed muco-purulent discharge bilaterally. Ear swab was taken for microscopy, culture and sensitivity. Aural toileting was done with warm normal saline and otoscopy revealed perforated ear drums which were also thickened and not shiny. Rinne test showed bone conduction greater than air conduction (BC>AC) bilaterally.

Impression of chronic suppurative otitis media with conductive deafness was made.

He was advised to continue with aural toileting with warm normal saline at home thrice daily and placed on amoxicillin capsules 500 mg and metronidazole tablet 400 mg eight hourly respectively. He was given one week appointment while awaiting results of requested investigations. The microscopy, culture and sensitivity result of ear swab yielded no growth after 48 hours, haematocrit 35%, white cell count 12 600 $\times 10^9$/L, lymphocytes 54%, neutrophils 45%, eosinophils 1% and erythrocyte sedimentation rate (ESR) 65 mm per hour (Westergren). Retroviral screening was negative. The chest X-ray did not show any pleural or parenchymal abnormality.

He reported on the appointed day with no improvement. Based on the investigation results of high white cell count with differentials and erythrocyte sedimentation rate, sputum examination for acid-fast bacilli (AFB) on three consecutive days and tuberculin test were requested for. AFB showed a negative result and tuberculin test showed 20 mm of induration after 72 hours.

A presumed diagnosis of tuberculous otitis media was made. A decision to commence on a therapeutic trial of anti tuberculous drugs was taken. He was educated about his problems and placed on rifampicin 600 mg, isoniazid 300 mg, pyrazinamide 900 mg and pyridoxine 25 mg daily for one month and also advised to come monthly for more drugs.

He returned in a month with marked improvement in his symptoms. He had no further ear discharge and the occasional cough had stopped. However, his hearing had not improved. He was given another one month course of antituberculous drugs and referred to an otorhinolaryngologist for otological evaluation. He came back for another course of drugs after which he defaulted and attempts to trace him failed.

3. Discussion

Tuberculous otitis media is a rare disease[10]. It accounts for between 0.04-0.90% of all cases of suppurative otitis media in developed countries but in areas where TB is still endemic there has been a steady rise in its incidence[5].

There are several routes by which tubercle bacillus can spread to the middle ear. In a study carried out on TB patients undergoing thoracoplasty, it was found that all patients who developed otitis media had abnormal eustachian tube patency[11]. This anatomical anomaly may predispose to middle ear involvement from retrograde flow of infected material during coughing in a patient with already existing pulmonary tuberculosis. It can also spread from a contiguous infected site and through the blood stream from other sites in the body to the middle ear[11-14]. Tuberculosis of middle ear is characterized by painless otorrhoea of insidious onset which fails to respond to the usual antimicrobial treatment, single or multiple tympanic membrane perforations, abundant pale granulation tissue in the middle ear and early severe hearing loss out of proportion to clinical findings[1,12,14]. Although the index patient presented with the above symptoms and signs, tuberculous otitis media was not considered because of its rarity.

The gold standard[15] in the diagnosis of tuberculosis in primary care among symptomatic patients, the so-called TB suspects is the sputum examination for AFB but this has been found in a study in two American hospitals to have a sensitivity of 67.5% (95% CI, 60.6 to 73.9) and specificity of 97.5% (95% CI, 97.0 to 97.9)[16]. Chest X-ray is only considered when there is a negative sputum examination[17]. The sensitivity of chest X-ray depends on factors such as the stage of the disease and the interpretation skill of the reader based on his experience[15]. These are the commonly conducted tests in developing countries, hence their negativity created diagnostic confusion in this patient. Polymerase chain reaction (PCR) and tuberculosis-enzyme-linked immunoabsorbent assays (TB-ELISA) could have been useful in diagnosis if they were available, though there is conflicting evidence of the utility of polymerase chain reaction as a diagnostic test[18].

Therapeutic trial is a recognized tool in the diagnosis of tuberculosis and was used in this patient in the resolution of diagnostic confusion. This treatment has to continue with the observation of clinical improvement for the recommended period of therapy[19,20]. Surgical intervention is indicated when there are complications such as formation of bone sequestra or necrotic bone; and when reconstruction of the tympanic membrane and ossicular chain after the middle ear disease has been eradicated[4,11,12,15]. Other complications

include severe hearing loss, cerebral abscess, meningitis and lateral sinus thrombosis[11,12,15]. These complications occur because of the rarity of this disease condition which result in late diagnosis. He had severe hearing loss requiring audiological assessment by an othorhinolaryngologist hence was referred.

His defaulting from treatment could be attributed to some reported reasons[21]. These include the relative long duration of treatment, the need for multiple drugs and socio-economic factors. This was quite unfortunate because of the possibility of multidrug resistant tuberculosis and a poor treatment outcome. Suggested means of curbing this include awareness creation in the management of such a disease, involving family members to oversee treatment and also research on ways of shortening duration of treatment[21].

Unresolving otorrhea in a patient after appropriate antibiotic therapy should be assumed to be tuberculous otitis media until proven otherwise. A high index of suspicion is paramount for the physician to arrive at a diagnosis but therapeutic trial can be employed in cases of diagnostic confusion. Reduction of default in treatment can be achieved by awareness creation in the management of such a disease, involving family members to oversee treatment and also research on ways of shortening duration of treatment.

Conflict of interest statement

We declare that we have no conflict of interest.

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