



CASE STUDY

Potts Disease in an Era of National Tuberculosis Control Programmes: a Case Report and Literature Review from an Urban area in Nigeria

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ABSTRACT

Pott's disease is an ancient disease that was first described in 1782 by Sir Percival Pott. The disease is still occurring despite decades of global initiatives to eliminate tuberculosis. Herein is a case report of an unvaccinated four year old boy with a chronic history of low grade fever, cough, back pain, paraplegia and urinary incontinence. Child was chronically ill, wasted, pale and weighs 67 percent of his expected body weight. There were signs of upper motor neuron lesion in addition to spinal tenderness, thoraco-lumbar kyphosis (gibbus), and inability to walk. Erythrocyte sedimentation rate was 120 mm/hr, manthoux test was positive (11mm) and spinal X-ray showed lytic vertebra and disc, calcification, wedge collapse and narrowing of disc space. A diagnosis of Pott's disease was made and Isoniazid, Rifampicin, Pyrizinamide, Streptomycin and prednisolone were commenced. He responded well to treatment and was subsequently discharged on follow-ups. Because the curability rate of Pott's disease with anti-TB and steroid is high; strengthening of health systems could improve the implementation of tuberculosis control programmes so that, the poorest of the poor could be reached since TB is more common among this population.

Keywords: Pott's disease, Era of tuberculosis control programmes, Health systems, Very young child, Yola, Adamawa state, Nigeria.

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INTRODUCTION

Tuberculosis (TB) is a disease that is caused by a bacillus called mycobacterium TB. This disease is still of public health relevance because greater than 30 percent of the world's population has it [1, 2]. Over eight million new cases of TB occur yearly, out of which approximately three million patients die [1, 2]. Yearly morbidity and mortality in children stand at about 1.3 million and half a million respectively with Africa having more cases than any other region of the world. (1, 2) Sir Percival Pott in 1782 described a rare variant of TB called spinal TB that was later on named Pott's disease, which accounts for about 15 percent cases of extra-pulmonary TB and less than two percent cases of TB [3-5].

Global efforts to control TB got a boost from the World Health Assembly (WHA) in the 90's with the launch of an internationally recommended control strategy called directly observe therapy short course (DOTS) [6]. Tuberculosis control programmes based on DOTS recorded major successes. Greater than 20 million patients were treated with 80 percent of them declared cured even as morbidity and mortality continue to decline [7]. Previous reports had indicated that Pott's disease now rare with the advent of anti-TB therapy [3-5]. It, therefore, means that the successes achieved by DOTS from various national TB control programmes (NTCP) should by now eliminate Pott's disease especially in patients that are not co-infected with human immunodeficiency virus (HIV). Herein is a case report of Pott's disease in a patient from Yola, Nigeria, where National Tuberculosis and Leprosy Control Programme (NTLCP) is on practice for about two decades [1].

CASE SUMMARY

A 4 year old boy presented to our health facility with a long standing history of low grade fever, cough, back pain, progressive weakness of both legs associated with urinary incontinence. There was no history of prior BCG immunization, trauma to the back or contact with individual having chronic cough. He was chronically ill-looking, wasted, pale and weighs 67 percent of his expected body weight for age and sex (marasmus by Wellcome's classification). Neurological examination revealed a conscious child with

reduced muscles bulk, increased muscle tone and power grade (2/5) on both lower limbs. Ankle jerk was hyperactive and Babinski sign was positive. Sensations were intact with mild spinal tenderness and kyphosis (Fig 1) at the thoraco-lumbar region, furthermore, patient could not walk. Full blood count showed packed cell volume of 26 percent, erythrocyte sedimentation rate (ESR) was 120 mm/hr. Mantoux test was positive (11mm) and chest X-ray was un-remarkable. Spinal X-ray showed features of wedge collapse around the thoraco-lumbar vertebral and narrowing of the disc space (Fig 2). Other investigations such as spinal computed tomography (CT-scan), magnetic resonance imaging (MRI), polymerase chain reaction (PCR), biopsy for histology and microbial studies were desired but could not be done due to lack of relevant facilities. A diagnosis of Pott's disease was made and patient was commenced on Isoniazid (H), Rifampicin (R), Pyrizinamide (H), Streptomycin (S) and prednisolone. Child improved on this regimen remarkably and was discharged on follow-ups.



Fig 1: Gibbus of the thoraco-lumbar vertebra (kyphosis)

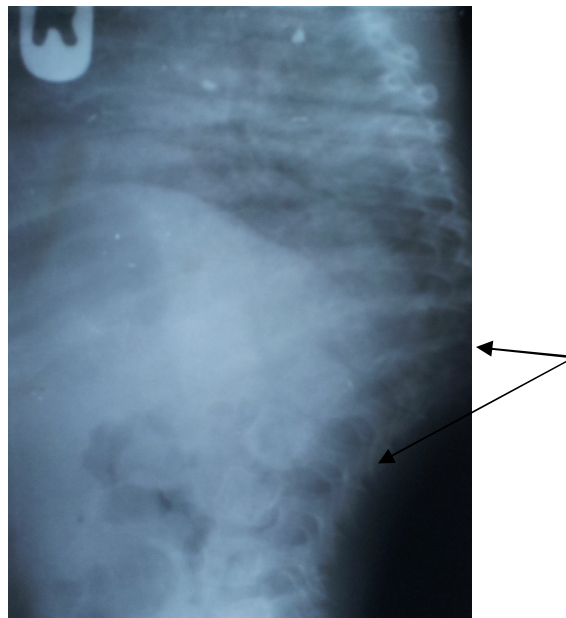


Fig 2: Spinal radiograph with black arrow showing lytic vertebral and disc destruction, calcifications, intervertebral space narrowing and wedge collapse (Gibbus)

DISCUSSIONS

Pott's disease is relatively common in other race aside Caucasians, and more common in males, older children and adults [8]. The observations above were in slight agreement with the index case because the

patient is an African four year old boy. However, being a four year old boy puts the current case in the very young age group, which contradicts publication of Nagashima et al [8] of 2010 that stated that most cases of Pott's disease involves older children and adults. Tuberculosis being endemic in our environment located in Sub-Saharan Africa could be the most likely reason for the occurrence of Pott's disease in this very young patient [1-7].

Current case presented with back pain, weight loss, low grade fever, kyphosis affecting thoraco-lumbar vertebra and neurological deficit. More so, he had positive manthoux test, elevated ESR and X-ray features depicting Pott's disease involving the thoraco-lumbar vertebra. All these coupled with other features of Pott's disease had been documented by many authors [3-5]. Haematogenous spread of mycobacterium TB from primary sites like the lungs, gut, kidneys, tonsils and para-aortic lymph nodes would lead to the spread of this organism to the vertebra [3]. Active infection by the mycobacterium TB on the vertebra leads to destruction of the vertebral bone and inter-vertebral disc thereby forming a wedge collapse called gibbus. This was evident in index patient and in fact, more than two vertebral bones were involved, meaning that there was the spread of this infection from one vertebral bone to another. The spread from one vertebral bone to another could have been possible via the Batson's plexus that are found around the vertebral column. Moreover, a previous study has associated Batson's plexus with local vertebral seeding of mycobacterium TB [3].

It is of paramount importance to note that X-ray of the vertebra alone could suffice in making the diagnosis of Pott's disease especially in health poor resource settings like ours. [1, 4, 9, 10] By the time features in keeping with Pott's disease appears on X-rays, it means the disease had already advanced diagnosis becomes obvious and could hardly be miss out. Features of Pott's disease that are visible on vertebra X-ray include lytic destruction couple with end plate and intervertebral disk damage, wedge collapse, reactive sclerosis, fusiform paravertebral shadows suggesting abscess, enlarged psoas shadow with or without calcification [3, 5]. With the exception of fusiform paravertebral shadow and enlarged psoas shadow, all other features were seen on radiograph of the patient's thoraco-lumbar vertebra. Nevertheless, vertebral CT-scan, MRI, tissue for histology and microbial studies and PCR were desired but could not be performed due to lack of appropriate facilities. The advantage of CT-scan and MRI over X-ray is that features highlighted above are picked early by CT-scan and extend of soft tissue involvement are clearly demonstrated on MRI [3,5].

But because most of our patients present late to the hospital where these high tech facilities are not available; X-ray in addition to history and physical findings may suffice in making the diagnosis of Pott's disease as done in recent case. Vertebral bone biopsy for histology and microbial studies is best done under CT-scan guide; again this could not be done due to lack of CT-scan machine. Microbial studies on its own where newer culture media are lacking like our centre may not be rewarding due the long time it will take to culture mycobacterium TB. Polymerase Chain Reaction if used would rapidly detect and diagnose several strains including resistance strain of mycobacterium without the need for prolonged culture. [11] Present case is HIV negative; however, studies had indicated that TB has re-emerged because of the high prevalence of HIV (1-5). Going by this, one would expect that there will be increase in cases of pott's disease as well. Nonetheless, however, this issue is still somewhat contestable. While cotton et al [12] in 1996 and Dass et al [3] in 2002 published that none of their Pott's disease patients had HIV, few cases of HIV were reported on some Pott's disease patients by Leibert et al [13] 1996. Thus, there is need for extensive studies to be carried out on this issue.

Index case was placed on HRZS and prednisolone with remarkable improvement. Similarly, successful treatment of Pott's disease had been documented with anti-TB and steroid chemotherapy. [1-5] Despite successful medical management of Pott's disease, the duration of treatment remains debatable. Whereas some authors have documented six to nine month course, others have published courses ranging from nine months to longer than one year [1-7]. But most cases have done well with one year course of anti-TB. Of note is that the duration of therapy should be individualized based on resolution of symptoms and clinical response by patient. Some patients may require surgical intervention in addition to medical therapy [1, 3].

So far, the NTLCP in Nigeria is based on DOTS for six months similar to WHA template for global TB control initiative [6,7] Sadly, TB control in Nigeria has become mainly the responsibility of government with little public-private mix. The government may not be able to handle this programme without the involvement of other actors like community and faith based organizations among other participants of the health system in Nigeria. More so, Pott's disease may not be adequately managed using the present template because the six month duration for the programme could be insufficient for complete resolution of the disease. On the average, it requires one year to effectively treat Pott's disease, [1,5] therefore, care-givers may be left with the burden of caring for their patients after six months from out of pocket expenses. Thus, there is the need to further re-design the NTCP to effectively accommodate the treatment

of Pott's disease. At the same time, health systems needs to be strengthen to allow for effective and efficient implementation of NTCP; such that, the poorest of the poor could be reached since TB is seen more among individuals from low socio-economic class.

CONCLUSIONS

Pott's disease is still occurring especially in developing countries of the world despite global and NTCP aimed at eliminating TB. Diagnosis are usually made by using X-ray features in resource poor centers like ours and the disease in nearly all cases respond to anti-TB and steroid therapy.

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