TUBERCULOSIS IN MIGRANT/RETURNEE NIGERIANS AND GOING FORWARD: REPORT OF TWO CASES OF POTT’S DISEASE AND REVIEW OF LITERATURE.

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Abstract
Background: Tuberculosis (TB) is an ancient infectious disease caused by the mycobacterium tuberculosis. Tuberculosis was and is a serious problem for the individual patient and for public health. Globally there are 8 million new cases per year with 2 to 3 million deaths. Although effective medication and vaccination are available, TB is still present today due to poor hygiene/socio-economic conditions and immune-compromised state (HIV/AIDS). Presently in Nigeria, migration has become social challenge and people with immune-compromised status have an increased risk of developing extra-pulmonary tuberculosis, including spinal TB.

Case Report: Two case reports are made with a review of articles to illustrate the trend of Pott’s disease seen in our environment and management of cases reported. Plain radiographs are important in the diagnosis of pulmonary tuberculosis and Pott’s disease. Paraplegia (Pott’s paraplegia) is the most serious complication of spinal tuberculosis and early detection and management is needed in prevention of this debilitating complication as shown in these cases reported.

Conclusion: Various forms of extra-pulmonary complications from tuberculosis especially spinal TB occur and knowledge of the full spectrum of radiological features of the sequelae and complications are important to facilitate diagnosis. The need to review the protocol for Nigerian returnees in the light of the health consequences is highlighted.

KEYWORDS: Nigerian migrants, pulmonary tuberculosis, Pott’s disease, conventional radiography, computerized axial tomography.

INTRODUCTION
Tuberculosis (TB)(Koch’s disease, Phthisis, consumption) is an ancient infectious disease confirmed in earliest human skeletal remains and caused by the mycobacterium tuberculosis, affects all ages and virtually every organ system in the body with devastating effects.1,2 However, despite effective treatment, TB is still present worldwide today due to multiple contributory factors. Tuberculosis is an air-borne disease transmitted when individuals with active pulmonary infection either sneezes, spits, coughs or speaks which aids its transmission in crowded cities with poor hygiene and socio-economic conditions or rural areas with added poverty and ignorance.3-5 TB has an insidious onset and infected patients presents with symptoms of persistent cough (which maybe bloody), fever, night sweats, generalized malaise and weight loss. However, the infection can reactivate at any time and may involve any organ of the body termed extra-pulmonary TB.6

Spinal tuberculosis (Pott’s disease, caries, tuberculosis spondylitis) occurs in less than 1% of patients with pulmonary TB and accounts for more than 50% of all skeletal TB. The increasing prevalence of tuberculosis is associated with both
immuno-compromised individuals (HIV/AIDS) and in recent years due to socio-economic and political crisis worldwide resulting in migrants and refugees makes this disease a topic of universal importance. Therefore the World Health Organization (WHO) declared TB a global health emergency in 1993. Therefore, with the migrants and refugees, screening of individuals who have been in contact with TB is difficult, identification/tracing/diagnosis is tasking and treatment is challenging. Tuberculosis demonstrates a variety of clinical, radiological findings and has known propensity of dissemination from primary site. It can mimic numerous other disease entities and manifest in a number of ways. Therefore, in Nigeria, the need to review the interest of physicians in the current trend of high proportion of cases of returnees/migrants back into Nigeria, health system utilization/screening strategies available to such group of Nigerians and the value of public health impact as well as the prognostic implications have prompted this report.

CASE REPORT ONE.

NI, a 27 year old female presented at the General Outpatient Clinic of the University of Benin Teaching Hospital on the 4th of May 2017 with a 9 months history of cough. Cough was productive of yellowish sputum associated with night sweats and chest pain. There was no history of breathlessness or haemoptysis, though she noticed slight weight loss. She was a returnee from Libya having stayed there in transit to Europe for two years and confirmed that she lived under very harsh conditions. She was a returnee from Libya having stayed there in transit to Europe for two years and confirmed that she lived under very harsh conditions was in contact with persons with chronic cough in a crowded-setting while in detention camps. She neither smoked nor drank alcohol. She had no history of paraplegia. Physical examination revealed a chronically ill-looking young woman, not pale, not jaundiced and afebrile to touch. Hematocrit was 19%. Mantoux test was 10mm positive. Pulse was 80 beats/min, regular and of moderate volume. Heart sounds were normal with no murmurs. Blood pressure was 110/60mmHg. There was decreased air entry on the right with transmitted breath sounds. Other systems were essentially normal. Laboratory investigations showed a packed cell volume of 29%, white cell count of 5,200/ml with a differential of 70% neutrophils and 30% lymphocytes. The erythrocyte sedimentation rate was 98mm/hour. Fasting blood sugar and urinalysis were normal. Mantoux test was 15mm. Patient refused to have retroviral screening done. The postero-anterior chest radiograph showed reduction in the right lung volume with an ipsilateral elevation of the hemi-diaphragm and fibrocystic changes in the right lower lobe with cavitory components and streaky infiltrates. The heart size was normal. The plain radiographic findings suggested fibro-cavitary lung disease which in our environment is in keeping with post-primary pulmonary tuberculosis (Figure 1).

Figure 1: Frontal chest radiograph showing reduction in right lung volume with ipsi-lateral elevation of the hemi-diaphragm, fibro-cystic changes and cavitory components involving the right lower lobe (Post-primary tuberculosis), with fluid level suggestive of an abscess cavity. Also noted is the loss of definition of the ipsi-lateral hemi-diaphragm and a fluid level suggestive of an abscess cavity.
She was referred to the Directly Observed Treatment (DOT) Centre for commencement of anti-tuberculosis drug regimens. While on therapy for two months, she complained of dull lower back pain and a dorsal spine radiograph was requested for proper evaluation. The thoraco-lumbar radiographs showed a reduction in the L2/L3 disc space with patchy destruction of adjoining vertebrae associated with mild spondylosis. There was mild anterior bone formation but not such formation laterally. There was no demonstrable para-vertebral soft tissue mass. The lateral view showed in addition, wedge-shaped collapse of L3 without associated kyphosis (Figures 2 & 3).

The serial axial CT images of the thoraco-lumbar spine showed hypo-dense L3 vertebral body and posterior elements with fissuring and destruction which was more extensive than the plain lumbo-sacral spine radiograph had demonstrated. The spinal canal was relatively spared. There was calcification anterior to the vertebral body. (Figure 4)

A diagnosis of pulmonary tuberculosis co-existing with Pott’s disease was made. She was then referred to the Pulmonologist and Orthopaedic surgeons for continued management. She absconded from management.
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CASE REPORT TWO
AK, a 38 year old male presented at the General Outpatient Clinic of the University of Benin Teaching Hospital on the 20th December 2016 with a year history of neck pain and 2 months history of difficulty with swallowing. He complained of progressively worsening neck pain and swelling which radiated to the back of the ears. There was no history of previous trauma. He also had dysphagia which was worse to solids associated with odynophagia. There was a positive history of cough, which was productive of whitish sputum associated with night sweats and chest pain. He is a recent returnee from Libya having stayed there in transit to Europe for five years and confirmed

that he had a history of contact with persons with chronic cough and in particular inmates with tuberculosis. He lived under very harsh conditions in a crowded-setting while in detention camps and labour farms. There was no history of haemoptysis, though he noticed slight weight loss and moderate anorexia. He smoked and drank alcohol but had no history of paraplegia.

Physical examination revealed a chronically ill-looking young man, not pale, not jaundiced, not dehydrated and warm to touch. Pulse was 108 beats/min, regular and of moderate volume with bradycardia. Respiratory rate of 20 circles per minute. Hematocrit was 30%. White blood cell count 4,900/ml. Neutrophil 46%, lymphocyte 41%. Others 13%. Erythrocyte sedimentation rate was 77mm/hour Westergren. Heart sounds were normal with no murmurs. Blood pressure was 150/90mmHg. Mantoux test 10mm. Fasting blood sugar and urinalysis were normal. Patient had retro-viral screening done, and was negative.

There was pooling of saliva in the oro-pharynx. There was a right sided posterior pharyngeal wall bulge with hyperaemic mucosa. The neck showed fullness over the right sterno-cleidomastoid region associated with torticollis, tenderness and differential warmth. A diagnosis of retropharyngeal abscess was made.

Chest radiograph showed evidence of fibrocystic changes in both upper lobes in-keeping with pulmonary tuberculosis (Figure 5). The post-nasal space and neck x-ray showed osteolytic destruction of C5 and C6 vertebral body with increased pre-vertebral soft tissue shadow associated with narrowing of adjacent airway (Figures 6 & 7).

Figure 4: Computerized axial tomogram of the lumbar spine showing destruction of the body of L3 vertebra with calcification anterior to the vertebral body, fissuring of the vertebral body and fragmentation of the lamina and transverse process on the left.
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Figure 5: Chest radiograph showing fibrocystic changes in both upper lung zones.

Figure 6: Coned down view showing the destroyed C5 and C6 vertebral bodies.

He had tracheostomy, incision and drainage of retro-pharyngeal abscess per oral which yielded frank pus of about 70mls. Post operation radiographs showed that pre-vertebral space was still widened but not bulging with residual right sided neck fullness. (Figure 7) Ultrasound showed hypo-echoic soft tissue collection with irregular margins and hyper-echoic debris within the retro-pharyngeal space measuring 5.9 x 8.0 cm. There was no associated lymphadenopathy. Patient had a second lateral pharyngotomy and drainage. The finding at surgery was a bulge on the right side of the neck, which yielded about 100mls of frank pus. Following drainage, there was a reduction in the fullness and improved speech.
DISCUSSION
Tuberculosis occurs worldwide in both endemic and epidemic proportions.\(^3\) As a sequel to unprecedented rise in the number of socio-economic and political crises in many parts of the world including Nigeria, there are increasing number of refugees, internally displaced persons and migrants with resultant health implications.\(^12\) There is a surge in the incidence of tuberculosis due to the partly to migration from/within crises-torn countries and HIV/AIDS.\(^13\) Other contributory risk factors are co-morbidities, nutrition/poverty, ignorance, overcrowding and poor health facilities.\(^3,4,5\) A person once infected is likely to harbour the tubercle bacillus for the rest of his or her life, a change in general health or resistance may lead to re-appearance of the infection.\(^3,6,11\) In these case reports, the risk factors included both patients being inmates of a detention facility with severe crowding, poor nutrition with no access to healthcare, possible contact with other inmates with a past history of TB and possibly HIV/AIDS. The clinical workup comprising of Mantoux test, spinal and chest radiographs were carried out for both patients and were positive. There have been few reports of co-existence of pulmonary tuberculosis with Pott’s disease as seen in these case reports (incidence of about 1.7%).\(^14,15,16\) However, the incidence of such an association is increasing to about 4-6% in many of the developing countries due to migration/refugee/Internally displaced persons associated with poor socio-economic and political factors, drug resistant strains and recently increased incidence of the human immunodeficiency syndrome.\(^15-16\) The mechanism for co-existing pulmonary tuberculosis and Pott’s disease can be grouped into (a) pulmonary tuberculosis occurring as a result of fistulization of para-vertebral abscess from Pott’s disease, (b) pulmonary tuberculosis with lymphatic or haematogenous spread to the spine.\(^17\) Pulmonary tuberculosis may be secondary to endo-bronchial fistulization from Pott’s para-vertebral abscess. This is a very rare clinical presentation even in developing countries. Most reported cases of para-vertebral abscess occurred in the thoracic spine, and less commonly in the lumbar and cervical spines.\(^14-17\) However in this case report there was no evidence of a para-vertebral abscess. Haematogenous spread of tuberculosis is via the communication between the venous drainage of other viscera like the lungs and the venous drainage of the vertebral bodies through the large valve-less para-vertebral venous plexus of Batson and probably the veins of the posterior abdominal wall. However it is commoner to have spread of infections and malignancies from the lungs to the spine than the reverse for some unexplained reasons.\(^17-18\) Haematogenous spread can also affect other extra-thoracic sites to include tuberculosis of the urinary and genital tracts, tuberculous meningitis, granulation on the fundus oculi, miliary and tuberculosis of the liver.\(^17,18,19\) Practical approach to the diagnosis of tuberculosis is multi-disciplinary and based on immunological, microbiology, haematological and radiological investigations including plain radiography and previously bronchography which is now obsolete, computerized axial tomography, angiography and magnetic resonance imaging.\(^20-25\) In this study, there was a correlation between microbiological, haematological and radiological investigations. The radiologic manifestations of primary and

Figure 7: Post operation radiograph showing straightening of the cervical spine with the pre-vertebral space still widened.
post-primary tuberculosis have been well documented. There was no documented association with the immuno-compromised states. Pott’s disease as demonstrated radiographically by varying degrees of vertebral collapse, kyphosis, kypho-scoliosis and most especially around the transitional vertebra have been extensively documented by different studies. Presently Computed Axial Tomography and Magnetic Resonance Imaging are used to properly evaluate tuberculous spondylitis and arthritis.23,24,25 As shown in case one of this report, computed axial tomography showed more extensive vertebra collapse with calcifications anterior to the vertebral body than the plain radiographic findings. There was associated fragmentation of the posterior elements with fissuring of the postero-lateral aspect of the body of the vertebra. The disc space was narrowed between L2/L3 vertebrae but the spinal canal appeared grossly normal. These findings on CT have been reported and stated to be due to improved resolution. The pattern of bone lesion reported has been described as either lytic or sclerotic mixed or fragmented). The disc space narrowing has been demonstrated to be with or without herniation, associated with involvement of vertebral appendages and extra-dural collection. The short coming of magnetic resonance imaging is the inability to adequately demonstrate calcifications. However, both CT and MRI modalities are not first line imaging facilities for early diagnosis and determination of extent tuberculosis.25,26 The use of radio-nuclide metastable technetium 99(Tc-99m), Gallium 67(Ga-67) scans for the early detection of occult and extra-pulmonary tuberculosis is fast becoming the norm in the developed countries, more especially in patients with history of prolonged fever. This allows for early detection, timely initiation of appropriate therapy and which will help reduce patient morbidity.27,28 The management in these patients reported in this study was conservative as radiologic investigations ruled out cord compression and extra-dural collection. However, the management of pulmonary tuberculosis is multiple anti-tuberculous drug regimen lasting for about 12-18 months. Rarely is there need for surgical intervention due to complications. Pott’s disease can be medically or surgically managed. The dearth of necessary socio-economic and medico-radiological facilities in our environment, most of the patients will present late and therefore need surgical intervention for the management of Pott’s disease. The major therapeutic problem is the development of drug-resistant strains resulting from inadequate and incomplete treatment. Many patients have complications due to non-compliance to therapy, poverty, the non-availability of drugs in the regular markets at normal price, black market drugs in inadequate dosage, interference in the treatment by unqualified practitioners, and the side effects of the drugs. Prognosis have been shown to be poor in patients with co-existing pulmonary and spinal tuberculosis and the severity is aggravated if there is extensive suppurative process around the osseous focus.29-33

CONCLUSION
Two cases of co-existence of both pulmonary and extra-pulmonary manifestations of tuberculosis with attendant diagnostic and therapeutic challenges were presented. The early diagnosis of Pott’s disease is necessary to prevent the possibility of complication of paraplegia/quadriplegia, and this needs a multi-disciplinary approach. The main focus is to reawaken the need to monitor, screen and diagnose infectious diseases among migrants and returnees to Nigeria to safeguard the health system and healthcare delivery.

RECOMMENDATIONS
1. There is a need to establish an entry screening system for the presence of infectious diseases especially tuberculosis, HIV/AIDS in migrant or returnee Nigerians.
2. All returnees/ migrant Nigerians should be required to stay in a reception centre or collective accommodation and must be
required to undergo mandatory medical examination for communicable diseases, including an x-ray of the chest within the first 5 days of arrival into Nigeria.

3. There is a need to therefore comprehensively study the incidence and prevalence of infectious diseases (Tuberculosis, HIV/AIDS) among migrant and returnee Nigerians for proper documentation.

REFERENCES


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