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TUBERCULOSIS OF THE SPINE IN ILORIN, NIGERIA

B. A. Solagberu, MBBS (Ibadan), FWACS (Ortho), Senior Lecturer, Consultant Orthopaedic and Trauma Surgeon and R. O. Ayorinde, MBBS (Ibadan), Registrar in Surgery

Request for reprints to: B. A. Solagberu, University of Ilorin Teaching Hospital, Ilorin Nigeria.

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B. A. SOLAGBERU and R. O. AYORINDE

ABSTRACT

Background: Data on tuberculosis (TB) of the spine from Nigeria is scanty despite the endemicity of the disease.

Objective: To highlight hospital data on spinal tuberculosis.

Design: A ten-year retrospective study of records on spinal TB from the medical records, orthopaedic and medical wards was done. The clinical notes, radiographs and haematology results of the patients were analysed.

Setting: University of Ilorin Teaching Hospital, Ilorin, Nigeria .

Subjects: All patients treated for spinal TB in the hospital from January 1990 to December 1999 were studied.

Results: Fifty patients were seen, 24 males and 26 females, age range 1.5 - 70 years (mean 27.1 \pm 22.8 years). Peak prevalence (30%) was in the first decade. Twenty seven patients had complete clinical data in their case notes. Twelve patients had paraplegia and three had concomitant pulmonary TB. The lumbar spine was the commonest site of involvement. Two thirds (18 patients) had positive mantoux test. Twenty three patients had chemotherapy but a third was lost to follow up within two months. Twenty one patients (77.8%) had difficulty obtaining the prescribed drugs due to financial difficulties. No patient had surgical intervention.

Conclusion: Spinal TB is still a common disease in Nigeria with unacceptable laxity in control measures. There is need for patient health education, contact tracing, provision of free anti-TB drugs and a general improvement in the economy to reduce the prevalence of spinal TB in the country.

INTRODUCTION

Tuberculosis (TB) of the spine is the most common form of skeletal involvement of TB(1,2). Tuberculosis is a deadly disease affecting many people of the world especially in the developing countries where poor nutrition and poor health education are significant factors. Whereas, seven cases of TB spine were seen in a teaching hospital in Canada(3) over a ten-year period and 29 cases in 20 years in a centre in the United States of America(4); a much higher number of patients is treated in the developing countries. In Gabon(5), 78 patients were treated in 10 years, 22 children in five years received care in a medical centre in Tanzania(6) and 31 patients in five years in another centre in Malaysia(7). Figures from West Africa and Nigeria were not available to the authors, hence this review. The association between TB and human immunodeficiency virus (HIV) is well documented. Indeed, TB can be an opportunistic infection in the immunocompromised, especially in those infected with the HIV. This is the common variety of TB in the developed countries although this variety is less pronounced in the developing countries.

Tuberculosis of the spine is an infection involving one or more components of the spine, namely; the vertebral body, intervertebral disc and ligaments, paravertebral soft tissues and the epidural space(8). Two varieties are recognised. The typical variety characteristically involves two contiguous vertebral bodies with narrowing of the disc space. Atypical varieties have been described when the disease is confined to a single vertebral body(9), when seen as an isolated infection of the neural arch(9,10) (also called posterior spinal TB) or with extradural extraosseous involvement presenting as an abscess(9) and when found in the sacrum(11). Though atypical forms are not uncommon and are found mainly in endemic areas in the developing countries(10) and among immigrants in the developed countries(1), the commoner variety is the typical TB.

MATERIALS AND METHODS

Information on TB of the spine over a period of ten years, 1990-1999, was obtained from the medical records department, orthopaedic and medical wards of the University of Ilorin Teaching Hospital Ilorin, Nigeria. The clinical notes and radiographs of the patients where available were further analysed to determine the vertebra involved, presence of paresis or

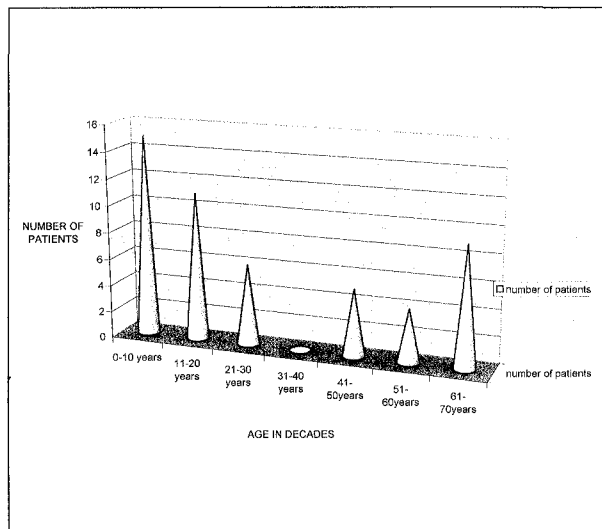
paraplegia, associated pulmonary TB and the presenting features. Follow up of the patients was documented. All the results were analysed and interpreted.

RESULTS

Fifty patients were seen during the ten-year period excluding 1991 because the records were missing. There were 24 males and 26 females (M: F= 1:1.1), with age range 1.5 -70 years (mean $27.1 \pm SD 22.8$). Twenty seven case notes were available for the last six years of the study, 1994-1999. Diagnosis, in all cases, was made on clinical and laboratory grounds supported by radiographic evidence of collapsed vertebra. Three of the 27 patients (11.1%) had concomitant pulmonary TB. Twelve of the 27 (44.4%) had paraplegia; seven had motor deficit while five had combined motor and sensory deficit. Twenty five plain radiographs were reviewed, the commonest site was the lumbar spine in eleven patients, thoracic spine and thoracolumbar spine six cases each while two patients had cervical lesions. Two thirds of the patients, 18 of 27 (66.7%) had positive Mantoux test. The erythrocyte sedimentation rate (ESR) was elevated above 45mm/hr (Westergreen) in all the patients.

Figure 1

Age distribution of patients with spinal tuberculosis



Twenty two patients (81.5%) had anaemia with haemoglobin below 10g/ dl. There was no consistency in the white cell count; it was normal in 10 patients, elevated in 12 and reduced in five (normal = $2-9 \times 10^9/l$) but relative lymphocytosis was consistently recorded. Twenty three of the 27 patients had anti-TB chemotherapy for a variable period of 0.17 months to 22 months (mean $5.3 \pm SD 5.8$ months) before being lost to follow up. Only four patients (14.8%) had follow up for 14 months to 22 months. A third of the patients (nine) were lost to follow up within two months of treatment. Twenty one (77.8%) patients had difficulties in obtaining the prescribed chemotherapeutic

drugs due to poor finances. No patient had surgical intervention.

DISCUSSION

Tuberculosis of the spine in this study was found commonest in the first decade of life. The prevalence of TB spine fell steadily till the fourth decade when there was no patient and it rose again and peaked at the seventh decade. This age distribution pictorially resembles two hills and a valley between them (Figure 1). The highest prevalence of the disease among children is probably not surprising in a community where many individuals still live below the poverty line and malnutrition is quite common. These children are easy targets of infection from the adults who already are poorly controlled — a result of poor follow up and poor drug compliance. The contribution of drug resistance to this distribution is not obvious. Since nearly a third (30%), of the patients were in the first decade, immunisation and improvement in nutrition may reduce this rate.

There is a slight female preponderance in this study. Sayi and Mlay(6) recorded a male preponderance among the 22 children seen in a paediatric surgical unit in Tanzania. Other workers got an 80% male involvement(12).

The vertebra involved varies from place to place. The thoracic spine was commonly involved in a study of TB spine from Saudi Arabia(13) and from the United States of America (USA)(12); the thoraco-lumbar region predominated in Tanzania(6), while lumbar involvement was evident in Malaysia and 53.3% of cases reviewed by the magnetic resonance imaging (MRI) in Kowloon, Hong Kong(14). This present study found involvement of 11 of the 25 available radiographs in the lumbar spine (44%), whereas six patients each had thoracic (24%), and thoracolumbar (24%) and two patients (8%) cervical region involvement.

The concomitant existence of pulmonary TB and spinal TB is well documented. Tuberculosis affecting the central nervous system, in this case the spinal cord, has frequently been secondary to TB in the lungs(15). Our series identified three patients (11.1%) of the 27 with full clinical data having pulmonary TB.

Complicated spinal TB is recognised when there is spinal deformity, paresis or paralysis. All the 27 patients had varying degrees of angular kyphosis (100%) suggesting late presentation while 12 (44.4%) had neurological deficit; seven (25.9%) had motor paralysis and five (18.5%) had both motor and sensory paralysis. No patient had isolated sensory deficits. This is quite in keeping with the pathology of the vertebral involvement where caseating material extends posteriorly to the spinal cord. In a rural hospital in South Africa, angular kyphosis proved a valuable marker for determining prevalence of spinal TB(16), thus, routine physical examination of at risk patients was used in making a diagnosis.

Radiography, nevertheless, remains the cornerstone for imaging techniques for spinal TB as it provides most

of the information necessary for diagnosis and treatment(1,17). However, radiographic findings and signs are typically far advanced when the diagnosis is finally established(2). The earliest sign on radiography is haziness of the intervertebral disc, suggesting discitis, before vertebral body collapse occurs in an anterior wedge shaped fashion. Indeed, the advent of computerised tomography (CT) has improved on the radiological changes especially in the bone. Evidence from magnetic resonance imaging (MRI) done on 24 patients clinically suspected of spinal TB in Bombay, India but who had normal radiographs showed three different patterns of infection: osteitis, osteitis with abscess and osteitis with or without abscess but with discitis(18). The anatomical pattern of involvement, particularly of the soft tissue and the discs, is specific for tuberculous disease. Therefore, MRI is able to detect TB of the spine earlier than other techniques. This has triple advantages in reducing bone destruction, and deformity and diminishing the need for surgical intervention(16). Cremin, Jamieson and Hoffman(19) recognised that CT and MRI were of limited use in areas where spinal TB is endemic, restricting their use for monitoring cases involving paralysis prior to surgery. Computerised tomography best evaluates the integrity of the posterior bony structures, which provide special stability while MRI best demonstrates the content and extent of the extradural mass that is causing the paralysis and differentiating an abscess from a fibrous tissue(17).

Twenty-three of the 27 patients in our series received chemotherapy for variable periods of 0.17 months to 22 months (mean: 5.3 ± 5.8 months) before being lost to follow up. Only four of the 27 patients (14.8%) were followed up for 14 to 22 months. This combination of poor drug compliance and poor follow up in an endemic area proves that there is a serious laxity in the TB control measures. The drugs were supposed to be prescribed and obtained free as part of measures to reduce this communicable disease but were not routinely available in the hospital pharmacy and could only be purchased across the counter outside the hospital, out of the reach of the poor patients' pockets.

CONCLUSION

Tuberculosis of the spine is a common disease in Nigeria. There is need to invigorate the control measures of the disease with immunisation of the at risk group, surveillance and contact tracing, improved nutrition of the populace and acquisition of modern methods of early detection of the disease. Follow up of patients should be improved upon.

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REFERENCES

- Ridley N., Shaikh M.I., Remedios D. and Mitchell R. Radiology of the skeletal tuberculosis. *Orthopaedics*. 1998; **21**:1213-20.
- Shanley D.J Tuberculosis of the spine: imaging features. *AJR. Am. J. Roentgenol.* 1995; **164**: 659-64.
- Fam A. G. and Rubenstein J. Another look at spinal tuberculosis. *J. Rheumatol.* 1993; **20**:1731-40.
- Nussbaum E.S., Rockswold G.L., Bergman T.A., Erickson D.L. and Seljeskog E.L. Spinal tuberculosis: a diagnostic and management challenge. *J. Neurosurg.* 1995; **83**: 243-7.
- Abstract in French Loembe P.M., Chouteau Y. Is there a place for surgery in Pott's disease in adults? Our experience in Gabon. *Neurochirurgie.* 1994; **40**: 247-55.
- Sayi E.N. and Mlay S.M. Tuberculosis of the spine in children at Muhimbili Medical Centre, Dar es Salaam. *East Afr. Med. J.* 1995; **72**:46-8.
- Jalleh R.D., Kuppusamy I., Mahayiddin A.A., Yacob M.F., Yusuf A.A. and Mokhtar A. Spinal tuberculosis: a five-year review of cases at the national tuberculosis centre. *Med. J. Malaya.* 1991; **46**:269- 73.
- Sharif H.S., Morgan J.L., al-Shahed M.S., al-Thagafi M.Y.. Role of CT and MR imaging in the management of tuberculous spondylitis. *Radiol. Clin. N. Amer.* 1995; **33**:787-804.
- Beekarun D.D., Govender S. and Rasool M.N. Atypical spinal tuberculosis in children. *J. Pediat. Orthop.* 1995; **15**:148-51.
- Abdelwahab I.F., Camins M.B., Hermann G. and Klein M.J.. Vertebral arch or posterior spinal tuberculosis. *Skelet. Radiol.* 1997; **26**:737- 40.
- Naim Ur Rahman, El Bakry A, Jamjoom A., Jamjoom Z.A. and Kolawole T.M. Atypical forms of spinal tuberculosis: case report and review of literature. *Surg. Neurol.* 1999; **51**:602-7.
- Rezaei A.R., Lee M., Cooper P.R., Errico T.J. and Koslow M. Modern management of spinal tuberculosis. *Neurosurgery.* 1995; **36**: 87-97.
- al Mulhim F.A., Ibrahim E.M., el Hassan A.Y. and Moharram H.M. Magnetic resonance imaging of tuberculous spondylitis. *Spine.* 1995; **20**:2287-92.
- Loke T.K., Ma H.T. and Chan C.S. Magnetic resonance imaging of tuberculous spinal infection. *Aust. Radiol.* 1997; **41**:7-12.
- Al Deeb, S.N., Yaqub, B.A., Sharif, H.S. and Motaery, K.R. Neurotuberculosis: a review. *Clin. Neurol. Neurosurg.* 1992; **94** suppl: 530-3.
- Ogle J.W., Wilson F.C. and McConnachie C.C. Angular kyphosis as an indicator of the prevalence of Pott's disease in Transkei. *S. Afr. Med. J.* 1994; **84**: 614-8.
- Hoffman E.B., Crosier J. H. and Cremin B.J. Imaging in children with spinal tuberculosis. A comparison of radiography, computed tomography and magnetic resonance imaging. *J. Bone Jt. Surg.* 1993; **75**:233-9.
- Desai S.S. Early diagnosis of spinal tuberculosis by MRI. *J. Bone Jt Surg.* 1994; **76**:863-9.
- Cremin B.J., Jamieson D.H. and Hoffman E.B. CT and MR in the management of advanced spinal tuberculosis. *Pedia. Radiol.* 1993; **23**: 298-300.