

Conservative Management Of Tuberculous Spondylitis In A Developing Country

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ABSTRACT

Background: Tuberculous spondylitis is a significant health burden in the Third world. Tuberculosis and its complications are on the increase because of the HIV/AIDS challenge. The aim of this study was to review the patients managed for tuberculous spondylitis at the University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria.

Methods: This was a retrospective study of patients seen at the University of Port Harcourt Teaching Hospital between January 1999 and December 2002 with tuberculosis of the spine. Patients case notes were reviewed after collating out-and-in-patient records. Analysis was done using multiway frequency tables.

Results: There were 16 males and 18 females, with a ratio of 1:1.1. Their ages ranged from 3.3 to 82 years with an average of 31.1. Peak ages of occurrence were the 3rd and 4th decades. Eighteen patients (52.9%) presented within the first 6 months of symptoms. The most frequent presenting symptoms were back pain, weight loss, difficulty with walking, low grade fever, and night sweats. The most frequent signs were gibbus and lower limb paralysis. The most common association was pulmonary tuberculosis (32.4%). The thoracic spine was mostly affected, followed by the lumbar spine. Wedge collapse of the vertebrae was the common radiological finding. Twenty two patients had multilevel affection. Twenty patients (71%) had a lymphocyte differential of more than 45%, 87% had erythrocyte sedimentation rate of over 20 mm/hr Westergren, and Mantoux test was positive in 55 percent of the patients. Twelve patients had outpatient treatment and 22 had in-patient treatment. Duration of hospital stay ranged from 7 to 157 days with an average of 62.6 days. All the patients had standard combination antituberculosis therapy. No patient had surgery for tuberculous spondylitis. Outcome of treatment was good (68.2%). Follow up was poor with a high default rate. There were 3 mortalities (8.8%).

Conclusion: Diagnostic delays partly due to lack of experience makes a high index of suspicion necessary to make a diagnosis. Outcome utilizing conservative methods of treatment is good.

KEYWORDS: Tuberculosis; Spine; Conservative management; Developing country.

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INTRODUCTION

Tuberculosis, a disease caused by *Mycobacterium tuberculosis*, can affect most systems of the body. Although pulmonary disease is the most common manifestation of the disease, extrapulmonary sites are not uncommon¹. The disease has been declared a global emergency by the World Health Organization². In 1996, it was estimated that there were about 30 million patients with tuberculosis worldwide³. Though previously considered a disease of the developing world, the incidence is rising worldwide^{3,5}. Reasons for the rising incidence include immunosuppression from human immunodeficiency virus infection/acquired immunodeficiency syndrome, drug and alcohol abuse, malnutrition, poorly controlled therapy, chronic renal failure, haematological and reticuloendothelial malignancies^{3,5,6}.

Tuberculosis of the spine affects about half of the cases of tuberculosis of the musculoskeletal system which constitutes about 3% of the cases of tuberculosis³. Though no part of the spine is spared, the disease has a predilection for the thoracic spine^{6,7}.

In developing countries, where the disease is endemic and extensive investigative facilities are not available, the diagnosis is usually made clinically and substantiated by radiological and other ancillary laboratory investigations^{3,5,8}. A high index of suspicion is required. However, in the developed countries especially with atypical presentation, there are diagnostic delays because of lack of experience with this disease⁶.

The goals of treatment of the disease are eradication of the infection, and ensuring a satisfactory orthopaedic and neurological outcome^{3,6}.

The aim of this study was to review the patients managed for tuberculosis of the spine at the University of Port Harcourt Teaching Hospital in the South-South zone of Nigeria.

PATIENTS AND METHODS

This was a retrospective review of patients seen at the University of Port Harcourt Teaching Hospital from January 1999 to December 2002 with tuberculosis of the spine. Both out-patients and in-

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patients were included in the study. The clinic and ward admission and discharge registers were utilized to extract the data. The case notes were retrieved from the medical records department. Data extracted were age, sex, clinical features, radiological findings, ancillary investigations, methods of treatment, follow up and outcome of treatment. Statistical analysis was done using multiway frequency tables.

RESULTS

A total of forty-four (44) patients were recorded as tuberculosis of the spine during the period under review. However, only thirty-four (34) case notes could be retrieved and analysed giving a recovery rate of 77.3%. Spinal tuberculosis constituted 0.1% of the total hospital admissions during the period under review.

There were 16 males and 18 females giving a male: female ratio of 1:1.1. Their ages ranged from 3.3 years to 82 years with an average of 31.1 years. The peak ages of occurrence were the 3rd and 4th decades. The age and sex distribution of the patients are shown in Table I.

Table I. Age and sex distribution of patients

Age (Years)	Sex		Total
	Male	Female	
0-9	0	2	2
10-19	1	3	4
20-29	6	7	13
30-39	4	3	7
40-49	2	1	3
50-59	1	2	3
60-69	1	0	1
70-79	0	0	0
80-89	1	0	1
Total	16	18	34

Over the 4-year period, the highest number of cases was recorded in the years 2001 and 2002.

The symptoms at presentation were weight loss in 23 patients (67.7%), low back pain in 23 (67.7%), difficulty with walking in 21 (61.8%), low grade fever in 17(50%), night sweats in 16(47.1%), cough in 15(44.1%), swelling of the back in 13 (38.2%), anorexia in 8 (23.5%), numbness and weakness of the lower limbs in 6 (17.7%), and upper back pain in 5 (14.7%). Three patients (8.8%) each had chest pain, constipation and difficulty with micturition. Two patients (5.9%) had bed sores at presentation. One patient (2.9%) each had diarrhoea, headache and amenorrhoea.

The duration of symptoms before presentation varied. Only three patients (8.8%) presented within the first four weeks. Eighteen patients (52.9%) presented between 1 and 6 months while the others (13) presented after 6 months. Of these, 4 presented between 7 and 12 months, 6 between 1 year and 4 years and 3 between 5 and 8 years.

The physical signs were gibbus occurring 26 patients (76.5%), bilateral lower limb paralysis in 20 patients (58.8%); of these, 12 were spastic and 8 were flaccid. One patient had unilateral flaccid lower limb paralysis and one patient had quadriplegia (flaccid). One patient had facial nerve palsy. Exaggerated deep tendon reflexes without paralysis were found in 5 patients.

Twelve patients were treated as out-patients while 22 patients were admitted and treated as in-patients. The duration of hospital stay for the admitted patients ranged from 7 to 157 day with an average of 62.6 days.

Tuberculous spondylitis was found to be associated with tuberculous at other sites. Eleven patients (32.4%) had associated pulmonary tuberculosis confirmed radiologically. Of the eleven patients (4 males and 7 females), 3 were 15 years while 8 were 16 years and above. One patient had tuberculosis of the hip and two patients had tuberculous meningitis.

The location of the lesion and the radiological features are shown in Table II.

Table II. Location of lesion and type of lesion

Location	Reduction in vertebral body	Vertebral Erosion	Wedge Collapse	Paravertebral shadow	Loss of joint space
Cervical spine		1			1
Thoracic spine		9	28	3	3
Lumbar spine	3	5	18		10
Total	3	15	46	3	14

Twenty two patients had multiple vertebral involvements. The commonest lesion was wedge collapse of the vertebrae followed by vertebral erosion and loss of joint space. The thoracic spine was the part most commonly affected.

The full blood count and erythrocyte sedimentation rate (ESR) were found for only 31 patients. Of these, 13 (41.9%) had haemoglobin of $\leq 10\text{g/dl}$ and 18 (58.0%) had haemoglobin of $\geq 10\text{g/dl}$. The white blood cell differential count showed a lymphocyte differential of $\geq 45\%$ in 9 patients (29.0%) and $\geq 45\%$ in 22 patients (71.0%). The ESR was $\leq 20\text{mm/hr}$ (Westergren) in 4 patients and $>20\text{mm/hr}$ in 27 patients (87.1%). Human

immunodeficiency virus screening was only found in 9 patients. Of these, one tested positive at the time of presentation.

The Mantoux testing was available in only twenty patients. Of these one patient (5%) had between 0-5mm, 8 patients (50%) 6-10mm and eleven patients (55%) had >10mm. In this series, there were three hyperensitive patients, two patients with diabetes and one sickle cell patient.

A conservative method of treatment was undertaken in all patients. They all had combination antituberculosis drugs. Sixteen patients (47.1%) had a combination of rifampicin, isoniazid, ethambutol and pyrazinamide, seven patients (20.6%) had rifampicin, and diateben, 4 patients (11.8%) had rifampicin, diateben and pyrazinamide, 3 patients (8.8%) had rifampicin, isoniazid and pyrazinamide, 2 patients (5.9%) had rifampicin, isoniazid, pyrazinamide and streptomycin and one patient each had rifampicin, diateben, streptomycin and rifampicin, diateben, pyrazinamide and streptomycin. No patient had surgery for the tuberculous spondylitis.

Of the twenty-two patients treated as in-patients, 15 (68.2%) had skin traction and one patient (4.6%) had a cervical collar. Of those who had skin traction, 2 patients were later supported with body jackets and one patient had lumbar corset for support. Physiotherapy was additional treatment in admitted cases.

The outcome of the treatment was generally good. For the twenty-two in-patients, 15 (68.2%) had good improvement with their muscle power returning to grade 5, one (4.6%) had slight improvement with muscle power improving from grade 0 to 2 before she was referred to another centre and 6 had no improvement with their muscle power remaining at grade 0.

The default rate after discharge was high. Six patients were lost to follow-up after discharge, 8 patients were followed up for only 1-4 months, 4 patients for 5-8 months, 7 patients for 9-12 months, 4 patients for 13-16 months and one patient for 17-20 months. One patient was referred to another hospital.

There were 3 mortalities (8.8%). The length of stay before death ranged from 7 to 57 days.

DISCUSSION

There was a slight female preponderance in our study, similar to that of Upadhyay *et al*. Another study in Jos, Nigeria had a male preponderance⁵. This could probably be due to cultural and religious differences, where males are more visible in the

northern part of Nigeria which is predominantly a Muslim enclave. A male preponderance has also been documented by other workers^{7,9}.

The young adults are the most at risk group, similar to findings in other studies^{4,5,9}. The third and fourth decades of life were the period of most risk in our study. This group by reason of their vigorous adventurism and survival pursuits exposes them more to infections by contact, and also immunosuppression from "social illnesses" like HIV/AIDS.

Our common presenting features included low back pain, weight loss, difficulty in walking, low grade fever and night sweats. Others were gibbus, lower limb paralysis (both spastic and flaccid), and exaggerated deep tendon reflexes without paralysis. These are common presentation in other African series^{5,7-9}. The most affected region was the lower thoracic spine, followed by the lumbar spine and this is similar to other studies^{3,5,7,9}. Twenty two patients (64.7%) had multiple vertebral involvement, and as already known wedge collapse was the commonest radiological finding^{3,5,10}. In our environment where spinal surgery is in its infancy and in a condition where histology of tissue biopsy from suspected lesions is the gold standard, a high index of suspicion is a strong tool, in addition to clinical features in clinching a diagnosis. Further help can be gotten from common ancillary investigations. Most of our patients were anaemic, 71% had a white cell differential count with lymphocytes over 45%, 87.1% had an ESR of over 20mm/hr Westergren and 55% had a positive Mantoux test. In a depressed economy, these cheaper investigations, in contrast to the highly sensitive computerized scanning methods, can help increase the index of suspicion.

Only three patients presented early for treatment. This is a usual trend in the developing world, where alternative practitioners (spiritualists, traditional bonesetters, quacks etc) are consulted before presentation in hospital in almost all musculoskeletal problems^{5,11}. Many a time they come to hospital at terminal stages, when little or no salvage can be achieved.

Eleven patients (32.4%) presented with pulmonary tuberculosis, three of them ≤ 15 years, and eight were 16 years and above. Upadhyay *et al* found tuberculous spondylitis to be associated with pulmonary tuberculosis in 12% of children and 27% of adults.

Although immunosuppression from HIV/AIDS is implicated for the recent upsurge in tuberculous^{3,6,12,13}, only one of 9 patients tested positive in our

series. Two of our patients were diabetic and one was a sickler. Malnutrition contributed to the immunosuppression in tuberculosis patients^{1,3}.

The out-patient mode of treatment is a recognized efficacious modality of treatment⁴. Of all our patients, 35.3% were treated as out-patients. The remainder were treated as in-patients. They were admitted on account of neurological deficits and poor nutritional states or where drug compliance was doubtful especially in children, or when the spine was found to be unstable.

All our patients had combination antituberculosis drugs. We adopted a strictly conservative method of treatment; none of our patients had surgery for the tuberculous spondylitis. Of those who were admitted and treated, 68.2% had skin traction. The skin traction was used to enforce rest and if the patient was found to be very spastic. The conservative method of treatment has been found to be as efficacious as the more radical methods of treatment^{3,6}. In most parts, the treatment comprises of bed rest and chemotherapy^{5,6}, though ambulatory outpatient treatment for those ambulant is also effective³. Some of our patients had additional spinal support like Minerva jackets and lumbar corsets.

Other treatments given were nutritional support, analgesics, vitamin B complex, haematinics and physiotherapy. These were necessary for adequate recuperation of the patients. It has been shown that vitamin B complex can substitute pyridoxine effectively⁵.

Generally, the outcome of treatment in our series was good. For those patients treated as inpatients mostly for neurological deficits, 68.2% had good outcome. This is similar to findings by other workers^{3,5}.

The follow up of these patients was poor. A good number of our patients defaulted from treatment at one stage or the other. Education of these patients will greatly reduce the default rate.

With the World Health Organization declaring tuberculosis as a global emergency², there has been a global effort to control the disease. One of such efforts is the Directly Observed Therapy, short-course (DOTS). DOTS is widely accepted as the most cost-effective strategy for tuberculosis control and has been observed to be a successful treatment strategy in tuberculosis¹⁴⁻¹⁷. DOTS has been demonstrated in Nigeria to be practicable, realistic and achievable provided there is total commitment, dedication and adequate motivation for both staff members and the patients' alike¹⁵.

The mortality rate in our series was 8.8%, which

is lower than 15% recorded by Nwadiaro *et al* in Jos⁵. This slight difference might be due to cultural differences, which again might affect the time of presentation.

CONCLUSION

Tuberculous spondylitis is a major health problem in the developing world. Poor economic fortunes with consequent lack of adequate equipment and training makes early diagnosis and treatment difficult. Negative cultural and religious beliefs are added loads to an already bad scenario. Education on the part of society, high index of suspicion on the part of the clinician, are the available hope for now. Outcome utilizing conservative methods of treatment is good.

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