TUBERCULOSIS OF THE SPINE IN CHILDHOOD IN KANO, NIGERIA

***ADELEKE, S. I.; *ASANI, M. O.; *BELONWU, R. O.; **MAMMAN, M.**

DEPARTMENTS OF *PAEDIATRICS, **RADIOLOGY, AMINU KANO TEACHING HOSPITAL, KANO

Correspondent: Dr. S. I. Adeleke,
Department of Paediatrics, A. K. T. H, Kano, P. M. B. 3452; Kano, Nigeria. **E-mail:** adelekesi@yahoo.com

ABSTRACT

Background:

Tuberculosis is a necrotizing bacterial infection with protean manifestation and wide distribution. The involvement of the spine is also increasing because of the resurgence of tuberculosis and HIV.

Objectives:

The objective of this study is to clinically evaluate the outcome of tuberculosis of the spine in children and to assess the prognosis of the deformity associated with TB spine.

Methods:

The study was a retrospective chart review of cases with spinal tuberculosis. Cases were those seen in Department of Paediatrics with the diagnosis of tuberculosis of the spine. The methods of management and prognosis were also assessed in the clinic. During follow-up response to treatment as it affects the neurological deficit was assessed.

Results:

The age distribution was between 8 months and 10 years. The commonest presenting symptoms were swelling at the back in 22 (84.6%). The duration of the swelling before presentation ranged from 4weeks to 2years (mean 16weeks). Other symptoms included fever, weight loss, anorexia and night sweats. Ninety (73%) of the children were wasted and 22 (84.6%) were febrile. Spinal lesions seen in 22 (84.6%) and there was kyphoscoliosis in 8(30.8%). The most common vertebra involved in the study was the 8th thoracic vertebra. They were all treated conservatively with ant tuberculosis drugs. The deformity in the patients was not cured.

Sixteen (61.5%) had spastic paraplegia at presentation while 6 (23.1%) had spastic paraperesis. Two (7.7%) had flacid paraperesis and the other 2 (7.7%) had flaccid paraplegia.

Conclusion:

Tuberculosis of the spine is still common in children with tuberculosis and treatment does not reverse the deformity associated with it There is therefore a need to explore other ways of managing these cases.

KEY WORDS; CHILDHOOD. SPINAL, TUBERCULOSIS.

INTRODUCTION

Tuberculosis is a necrotizing bacterial infection with protean manifestation and wide distribution[1]. Tuberculosis still remains a problem in developing countries[2,3]. The involvement of the spine is also of increasing importance because of the resurgence of tuberculosis with HIV[4]. Various aspects of tuberculosis affecting Nigerian children have recently been reported[5]. The pulmonary form of the disease is the commonest; however, involvement of the spinal column is not uncommon[6]. The present study details the clinical features and relevant investigations and prognosis of children seen in the paediatric medical ward of Aminu Kano Teaching Hospital (AKTH), with tuberculosis of the spine over a four year period and still being followed up regularly in the clinics after discharge.

MATERIALS AND METHODS

The cases were those seen in the paediatric medical ward AKTH during the period January 2001 December 2004. The diagnostic criteria were radiological evidence of osteitis of the spinal vertebrae. The investigations included x-ray of the lungs, thoraco-lumbar or cervical, packed cell volume (PCV) and in appropriate cases microscopy and culture of sputum and gastric washings.

Each of the cases was commenced on four standard anti-tuberculous drugs consisting of streptomycin, isoniazid, rifampicin and pyrazinamide. After being stabilized, they were seen regularly in the cardio-pulmonary clinic. During follow-up, the progress of the disease including mobility of the spine was assessed. Other aspects assessed regularly during follow-up included weight and the response to therapy of any neurological deficit as well as other tuberculosis lesions outside the spinal column.

Results:

Age and sex distribution.

The children were aged between 8 months and 10years (Table 1). There were 18 males and 8 females, an M/F ratio of 1:0.4. Fifteen (57.6%) were under five years.

Symptoms:

The commonest presenting symptom was swelling at the back which was present in 22 (84.6%) cases. The duration of the swelling before presentation ranged from 4 weeks to 2 years (mean 16 weeks). Cough was present in 20 (76.9%) cases. Other symptoms included fever, weight loss, anorexia and night sweats. Neurological symptoms consist of inability to stand or walk in 19 (73%) of the cases. Other symptoms were backache and neck pain in the older children.

Signs:

Nineteen (73%) of the children were wasted. Twenty two (84.6%) children were febrile on presentation with temperatures ranging from 37.8°C to 40°C. Ten (38.5%) had hepato splenomegaly.

Spinal lesions:

A gibbus was present in 22 (84.6%). It was tender in only 15 (57.7%) and was hard and non-fluntuant in all the 22 children. There was ulceration over the gibbus in 2 cases. Kyphoscoliosis was seen in 8 (30.8%) of the cases.

Neurological signs:

Sixteen (61.5%) had spastic paraplegia at presentation while 6 (23.1%) had spastic paraparesis. Two (7.7%) had flaccid paraparesis and the other 2 (7.7%) had flaccid paraplegia.

Sites of spinal lesions:

The commonest single vertebra involved in the study was the 8th thoracic vertebra (10cases) followed by the 7th thoracic (6 cases) and the 2nd lumbar vertebra (5cases). Both the thoracic and lumbar vertebrae were involved in 3 children while 2 cases involved the cervical vertebra.

Associated tuberculous lesions:

Fifteen (57.7%) of the cases also had pulmonary tuberculosis, 10 (38.5%) had glandular tuberculosis, 5 (3.8%) had abdominal tuberculosis. None of the children had tuberculosis involvement of the spine in isolation.

Tuberculin skin test:

All the patients had mantoux. Only mantoux test was positive in 17(65.4%) of the 26 cases.

Haemogram:

Haematocrit (PCV) values ranged from 25% to 40% (mean 35%). The total WBC varied from 4.5 24.0 x 10^9/L.

Radiology:

There was collapse of the vertebral body in 10 cases. There was a mixture of collapse and destruction of the vertebral body in the remaining 16 cases. There were 22 cases of spinal mass on vertebral x-rays. The intervertebral disc spaces were narrowed or obliterated in all the cases. Chest radiological

findings included mediastinal adenopathy in 19 (17.1%) cases miliary shadowing in 4 (15.4%) and 2(7.7%) had pleural effusion.

Management:
All the cases had 4 standard anti-tuberculous drugs (streptomycin, isoniazid, rifampicin and pyrazinamide). Twenty two cases had plaster of paris jackets for 6 18months. None of the cases had any surgery.

Outcome:
None of the cases was known to have died. During follow-up however, 2(7.7%) defaulted from the clinic. It was possible to assess progress in 14 cases which attended follow-up clinic for more than 12months. There was no improvement noticed in the physical deformity, the Kyphosis previously noted became more pronounced as the child grew older. Recovery of neurological function in the limb in those with paraparesis or paraplegia was gradual.

TABLE I: Age distribution on 26 cases of tuberculosis of the spine.

Age (Years)	No. of cases	(%) of total
<1	1	3.8
1 5	16	61.6
>5 10	9	34.6
Total	**26**	**100**

TABLE II: Presenting symptoms in 26 cases of tuberculosis of the spine

Symptom	No. of cases	(%) of total
Swelling at the back	22	84.6
Cough	20	76.9
Inability to stand/walk	19	73.0
Fever	18	69.2
Loss of weight	16	61.5
Backache	7	26.9
Night sweat	5	19.2

TABLE III: Signs in 26 cases of Tuberculosis of the spine.

Signs	No. of cases	(%) of total
Wasting	19	73
Febrile presentation	22	84.6
Hepatospenomegally	10	38.5
Neurological:		
Spastic paraplegia	16	61.5

Spastic paraparesis	6	23.1
Flaccid paraplegia	2	7.2
Flaccid paraperesis	2	7.7
Spinal Lesions: -		
Gibbus	22	84.6
Tender swelling	15	57.7
Ulceration over gibbus	2	7.7
Kyphoscollosis	8	30.8

DISCUSSION:

In tuberculosis affecting bones and joints, it is the spinal column site that is the commonest and carries the worst prognosis[1].

Most of the clinical features in the present series did not differ appreciably from those in other studies[2,3]. Pain and back tenderness which were features of disease were thought to be associated with spasm of spinal muscles. The most frequent region involved in the present study was the thoracic segment followed by lumbar. This has been documented by other studies also[3,6]. The involvement of the thoracic spine leads to paraplegia mostly seen in this series. Neurological involvement whose incidence in Pott's disease varies from 18% - 41%[7] is usually multi factorial. It includes compression which may be caused by paraspinal abscess invading the spinal cord; granulation tissue encroaching on the dura sequestrated bone or intervertebral disc, and rarely by dislocation of the vertebra. The high incidence of neurological damage in this study (100%) may be due to late presentation for medical attention. Although involvement of the spinal bone is usually present in cases of the tuberculous paraplegia, the condition may be associated with non-bony lesions such as tuberculosis basal meningitis, extra osseos, extra dural tuberculosis[8]. However, radiological changes of osteitis of the vertebral body in this environment, though most commonly caused by tuberculosis can also be due to conditions such as trauma, pyogenic infections, Histoplama duboisii and neurofibromatosis. Computed tomography evaluation is an adequate modality for thorough imaging and diagnosis especially with patients with non-specific or ambiguous presentations and it also defines the pattern and extent of destructive process[10]. However, magnetic resonance imaging is extremely useful in diagnosing the difficult and rare sites of disease like the cranio-vertebral junction. It detects the marrow changes, exudative and granulation types, extra and intradural disease and radiological response in early follow-up period of 6 8 weeks.

The management of spinal tuberculosis remains controversial. The controversy centres mainly on whether cases should be treated conservatively or by elective surgery and if by the latter, at what stage and what type of operation. However, traditionally prolonged immobilization on a plaster bed had been the method of treatment[12]. Later, it was shown that out-patient ambulatory non-surgical treatment consisting of antituberculous drug therapy and plaster jacket were equally effective where the aim was the relief of pain and prevention of gross deformity[13]. However, it was observed that in cases treated conservatively, spinal deformity progressively worsened as the child grew older. In view of these observations, some workers advocated early surgery. However, the controversy surrounding the methods of treatment led to large scale trials of various methods organized at different centres by MRC of Britain[14]. The results at the end of three years in terms of the overall response to

treatment, between those treated surgically and those treated conservatively showed that there was no difference.

In our study all the patients were treated conservatively. A constant review is necessary though healing of lesions and recovery from accompanying neurological complications took place with conservative management in this study.

It is therefore pertinent to improve the degree of deformity. There is need for other ways of management to be explored.

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