SPINAL TUBERCULOSIS IN SOUTHERN NIGERIA

With special reference to Ambulant Treatment of Thoraco-lumbar Disease

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Thoraco-lumbar tuberculous spondylitis is prevalent in Southern Nigeria. Ibadan, a town of half a million people, has hitherto been served by two small hospitals with a totally inadequate number of beds. It was clear that no accommodation could be afforded for patients with the prospect of a prolonged stay if beds were to be kept available for still more urgent work. It was therefore decided to attempt treatment of spinal tuberculosis by an ambulant out-patient régime except when there was evident or suspected involvement of the spinal cord.

In the first part of this paper the general pattern of tuberculous spondylitis as seen in 140 South Nigerians is outlined briefly. In the second part the method and results of out-patient treatment of thoraco-lumbar disease are described.

CHARACTERISTICS OF THE DISEASE

Bacteriology—Though no bacteriological data are as yet available it is a fact that, after weaning, no fresh milk is consumed in Ibadan because there is still no trypanosoma-resistant breed of cattle that can be kept on a sound commercial basis in these regions. There appears to be no clear source of bovine tuberculous infection and, in fact, classical calcifying tuberculous mesenteric adenitis (tabes mesenterica) is hardly ever seen. Inhalation is presumably the mechanism of infection.

Tuberculin sensitivity—The "Heaf test" was positive in all cases.

The lungs—Sixty-two of the patients (40 per cent) had radiological evidence of pulmonary tuberculosis. In thirty, this was a hilar adenopathy. In thirty-two there were radiological signs of parenchymal disease.

FIG. 1
Histogram showing the incidence of vertebral tuberculosis at various levels.
Associated non-pulmonary tuberculous lesions—Four patients had phlyctenular conjunctivitis, one “caries sicca” of the shoulder, one “caries sicca” of the hip and one tuberculous abdominal glands.

Complications—Sinuses or psoas abscess were seen in eight patients. None appeared during treatment. Nine patients had involvement of the spinal cord, which developed under treatment in two. One child died of tetanus thirteen months after the beginning of treatment. The source may have been a sore under the plaster jacket. Patients ought to be immunised before jackets are applied because tetanus is common in Southern Nigeria.

Localisation—Altogether 163 patients with tuberculosis of bone and joint were seen since 1952. Of these 140 had spondylitis. In the remaining twenty-three the disease was localised as follows: knee nine, hip five, shoulder three, hand three, elbow two and ankle one. The preponderance of spinal lesions is clearly seen. Of the 140 patients with spinal disease the cervical spine was involved in ten and the sacral vertebrae in three.

Dobson (1951), in a large series, found the mid-thoracic region affected in 45 per cent of cases, the lower thoracic region in 15 per cent and the lumbar region in 31 per cent. A functional grouping of the lower thoracic segments with the lumbar segments may be preferable to a descriptive anatomical subdivision of the spine. The region T.10–L.4, being the mobile segment, might be considered as one functional unit. Our histogram (Fig. 1) shows this unit predominantly affected in our patients. The frequency with which L.1, 2 and 3 are affected indicates a deviation from the European pattern.

Age—The age incidence is shown in Table I.

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Number of patients</th>
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<tbody>
<tr>
<td>0–4</td>
<td>44</td>
</tr>
<tr>
<td>5–9</td>
<td>52</td>
</tr>
<tr>
<td>10–14</td>
<td>20</td>
</tr>
<tr>
<td>15–25</td>
<td>4</td>
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<tr>
<td>25 and above</td>
<td>20</td>
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Nigerians commonly carry heavy loads on their heads. It has been suggested that this may predispose their spines to disease. The large number less than five years old makes this supposition unlikely.

Sex—There were eighty-six males and fifty-four females.

Bridge formation—An unusual feature in eight of our older patients was the formation of bridges in the anterior and lateral spinal ligaments. These were not due to calcification of a paravertebral abscess: true bone had formed. The sacro-iliac joints were normal in all.

In three patients bridges formed during out-patient treatment.

Case 1—In 1954 a woman aged twenty-seven was found to have caries of T.10, 11, 12 and L.1 vertebrae, with pulmonary tuberculosis. A year and a half later there was an anterior bridge from L.2 to fused T.12 and L.1; T.10 and 11 appeared healed (Fig. 2).

Case 2—In 1956 a man aged twenty-two developed caries with collapse of T.10 and 11 vertebrae. A year and a half later a bridge was forming between L.1 and L.2.

Case 3—In 1956 a boy aged fifteen was seen with caries of T.12 and L.1 vertebrae. The diseased L.4 vertebra was joined to L.3 and nearly to L.2; there was “caries sicca” of the left shoulder. A year later there was healing of T.12 and L.1 with a new bridge; L.2 and L.3 vertebrae were solidly united (Fig. 3).
Fig. 2
Case 1—Marked anterior bridging eighteen months after onset.

Fig. 3
Case 3—Extensive anterior bridging a year after onset of tuberculosis of T.12 and L.1 vertebrae.
In one patient solid bridge formation was present at the time of first attendance. A similar state was present in one further patient but bridge formation continued under out-patient treatment.

In contrast, in three patients referred to our clinic bridge formation was present without evidence of spinal caries. Thus in a man aged fifty there was bridge formation in the thoraco-lumbar spine, and a sinus over the sternum.

In the two patients in whom bridges were present at the time of the first attendance the caries occurred above the level of the bridge, possibly from abnormal stresses. In some cases of bridging the affected vertebrae showed no signs of past or present caries. In three patients (1, 2 and 3) bridge formation, although at a distance from the disease, appeared as part of the healing process, and may be taken as an expression of a strong tendency to reactive bone formation which will be referred to later. Further investigation is necessary.

![Fig. 4](image)

Some of the patients.

**OUT-PATIENT TREATMENT**

We excluded ten patients with cervical caries as we felt that these should be treated by orthodox methods. Only thoraco-lumbar and sacral disease was considered suitable. Eight patients belonging to this group had burnt-out lesions. There remained 122 patients who were accepted for ambulant treatment.

The first group of patients comprised six children who attended first in 1952. They were given rest in hospital for one month during which they received streptomycin and para-aminosalicylic acid and were put into plaster-of-Paris jackets. Drug treatment was discontinued thereafter and the children were discharged home. They were seen at three-monthly intervals for assessment and reapplication of plaster.
Under this régime the disease process took a favourable turn in three patients, but in the other three it continued to advance. In all but one there was spread of the disease after treatment began, one further vertebra being affected in three and two further vertebrae in two patients.

Wilkinson (1954) stated that direct observation of tuberculous tissue treated with streptomycin showed little improvement in established osseous lesions. He concluded that streptomycin and iso-nicotinic acid hydrazide cured early and mainly synovial lesions but not late ones. Our patients do not attend for early lesions of any sort. As it appeared that
were three deaths, one from tuberculous broncho-pneumonia two days after the first attendance, and two from unknown causes.

Fifty-two patients did well or are doing well. The following are examples of successful ambulatory out-patient management of lumbo-thoracic tuberculous spondylitis.

**Case 4**—In 1956 a boy aged seven years was found to have T.5 and T.12 vertebrae separately affected by tuberculosis. A year later T.5 vertebra was collapsed and solidifying.

**Case 5**—In 1956 a girl aged five years was seen with caries of T.6-8 vertebrae and a paravertebral abscess. A year later there was evidence of healing, and the paravertebral abscess was shrinking.

**Case 6**—In 1956 a girl aged four years developed caries of T.9 and 10 vertebrae (Fig. 5). Five months later the disease process was continuing, with vertebral collapse. After a further four months there was merging of the vertebrae with healing (Fig. 6).

**Case 7**—In 1955 a girl aged two years attended with severe caries, with collapse of T.10, 11 and 12 vertebral bodies. Four months later T.11 vertebral body had disappeared, and the disease was quiescent.

**Case 8**—In 1955 a boy aged two years attended with caries of T.12 and L.1 vertebrae. A year and a half later there was fusion of the affected wedged vertebrae with healing.

**Case 9**—In 1955 a girl aged two years developed caries of L.2 and 3 vertebrae. Seven months later there was merging of the affected vertebrae, with sound union.

**Case 10**—In 1955 a girl aged two years was seen with destruction of L.4 and 5 vertebrae (Fig. 7). A year and four months later there was fusion of the affected vertebrae and sound healing (Fig. 8).

**DISCUSSION**

The ambulant treatment of patients suffering from tuberculous spondylitis was forced upon us by circumstances. Healing has often been rapid, and there have been few reverses.
Drug treatment appears to be more important than plaster fixation: plaster jackets are not well looked after by some of our patients and, especially during the rainy season, become soft. The main purpose of the jacket is relief of pain—for which it may be dramatically effective—and prevention of gross deformity.

It may be that West Africans have a special tendency to reactive bone formation (ununited fractures are uncommon among them) but it is also possible that, irrespective of race, maintaining the upright posture may be less harmful in Pott's disease than is commonly supposed. Maintenance of weight bearing, an active circulation and a good morale may prove equal or even superior to the long-established opposite. In any case the method adopted at Ibadan may be of use in those underdeveloped countries where prolonged retention in hospital cannot be attempted.

**SUMMARY**

1. In Nigeria, among the sites affected by tuberculosis of bones and joints there is especial frequency in the lumbo-thoracic junction from the tenth thoracic to the fourth lumbar vertebrae.
2. Outstanding in the pattern of the disease in adults is a tendency in certain patients to ossification of the spinal ligaments.
3. An ambulatory out-patient régime is described. So far it has promised well.

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**REFERENCES**
