Results of surgical decompression in chronic tuberculous paraplegia

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Summary

The results of surgical decompression in 117 patients with chronic tuberculous paraplegia, defined as paraplegia persisting for more than 3 months, were reviewed. After surgery 90 patients were able to walk. Significant findings at surgery were marked extradural fibrosis with very little caseation and pus. The study showed that paraplegia of greater than 6 months' duration was associated with a poor result. There were no cases of reactivation of the disease in the follow-up period ranging from 1 year to 4 years.

Paraplegia caused by spinal tuberculosis is uncommon in First-World countries but is still prevalent in densely populated areas of Asia and Africa. Ito et al.1 and Hodgson and Stock2 reported their results of anterior decompression for spinal tuberculosis. Capener3 first described lateral trachotomy in which a part of the rib and pedicle were removed in the exposure of the spinal cord. Anterolateral decompression was devised by Alexander;4 in this the posterior elements were left intact thereby preserving lateral stability. The anterior approach allows a more thorough decompression and debridement of the infected area. Hodgson and Stock5 reported that their results of surgical decompression in long-standing paraplegics was poor and this has been confirmed by others.6,7 Our experience has shown that surgery in these patients produces satisfactory results, but the prognosis is poor if paraplegia is >6 months' duration.

Patients and methods

Between 1983 and 1985, 281 black patients had surgical decompression for tuberculous paraplegia. In 117 patients paraplegia was greater than 3 months' duration. In the chronic disease group 76 patients were admitted to peripheral hospitals soon after the onset of paraplegia and made no recovery on antituberculosis therapy administered for 3 months. The remaining 41 patients did not seek early medical attention for various socio-economic reasons.

Forty-six patients were older than 50 years of age, the oldest being 82 years. Fifty-eight patients were between 30 and 50 years of age. The youngest patient was 18 years old. There were 60 men. Ninety-eight patients had unremitting backache of >6 months' duration before developing paraplegia. In 56 patients paraplegia was present for 5 months; in 38 patients for 4 months; in 17 patients for 6 months and in 6 patients for 9 months. In all but 1 patient paraplegia was of gradual onset.

In 107 patients paraplegia was associated with spasticity of the lower limbs and of these 36 patients had contractures of the lower limbs. Ten patients had flaccid paraplegia. All patients were incontinent of faeces and urine. Three patients developed paraplegia during the second trimester of pregnancy. The pregnancy was allowed to continue to term, while patients were treated with antituberculosis drugs, and had surgical decompression after delivery. Fifty-eight patients had been treated for pulmonary tuberculosis in the past, although a further 44 patients had radiological evidence of old pulmonary tuberculosis. Forty-eight patients had bed sores and 82 patients were malnourished.

In 36 cases the lower dorsal spine was involved. Ten cases involved the dorsolumbar junction. In 5 cases there were double lesions and a myelogram was used to determine the lesion responsible for paraplegia. Obvious kyphotic deformity was evident in 87 patients. The kyphosis ranged between 8° and 72°. All patients received antituberculosis therapy and attention was initially directed towards improving their nutritional status. Anterior decompression and bone grafting was performed in 114 patients and in 3 patients an anterolateral decompression was done because of severe kyphotic deformity. A thick pale greyish membrane was found constricting the cord and a notable feature in these cases was the absence of pus and sequestra. The fibrosis was cleared to expose the cord. Cord pulsations were observed in 56 cases after decompression. Contractures were treated with traction and serial splintage.

Results

Recovery was assessed at weekly intervals. Complete sensory recovery occurred in 90 patients within 4 weeks after surgery. In 21 patients motor recovery started at 2 weeks; in 25 patients at 10 weeks and in 4 patients at 12 weeks. Recovery was complete in 90 patients between 5 and 9 months after surgery. Seventy-six patients walked independently, 11 patients used a walking stick, and 3 patients used bilateral above knee calipers. Twenty-five patients with partial motor and sensory recovery were confined to wheel-chairs. Two patients did not recover, both had flaccid paraplegia with lesions in the upper dorsal spine. Eighty-three per cent of patients who were treated with antituberculosis therapy before admission to hospital recovered, whereas in the group that did not seek early admission only 63% recovered.

In the partial-recovery group there were 8 women and 17 men; 12 patients were older than 50 years. Nineteen patients in this group had had paraplegia for 6 - 9 months. Spastic paraplegia was present in 21 patients and 4 patients had flaccid paralysis. In 13 patients the lesions were confined to the upper dorsal spine.

All patients received antituberculosis treatment for 18 months and were assessed radiologically at intervals of 3 months. Progression of kyphotic deformity (range 5 - 25°) was noticed especially in cases involving the lower dorsal spine. After recovery and with an improvement in the patients' general condition most bed sores healed primarily. Cord pulsations were only present in 24 of the 56 cases that were assessed. Of the 24 cases with cord pulsations 19 patients fully recovered.
and 3 patients had partial recovery. Of the 32 remaining cases, 26 patients recovered completely and 6 patients had partial recovery. Cord pulsations as a prognostic sign after decompression were not contributory.

Complications

There were no deaths, but 1 patient required an urgent thoracotomy 8 hours after surgical decompression because of a profusely bleeding intercostal artery. Eleven patients developed superficial wound sepsis which resolved with antibiotics. Five patients were treated for acute depression.

Discussion

King Edward VIII Hospital is the only major referral centre for the treatment of spinal tuberculosis in the province of Natal, which has a population of about 7 million and covers an area of 130 000 sq. km. Approximately 2000 cases of tuberculosis are seen at the hospital per annum and of these about 200 cases have bone and joint involvement. Patients with radiological features of spinal tuberculosis but without any neurological deficit undergo antituberculosis treatment and a spinal support for 18 months after the diagnosis has been confirmed by closed-needle biopsy. Inpatient treatment for a period of 6 weeks is confined to those patients whose general condition is poor and those with active pulmonary tuberculosis. These patients are subjected to surgery only if there is a severe progression of the kyphotic deformity so as to prevent late onset paraplegia.\(^5\)\(^,\)\(^9\) Essentially, we follow the ‘middle path’ regimen advocated by Tuli.\(^10\)

In acute onset paraplegia 95% of our patients recovered after surgery and this started within 24 hours in most of the patients. In the acute cases the characteristic finding was a ‘wet’ lesion consisting of a large volume of pus, together with sequestra or disc impinging on the cord. The granulation tissue surrounding the cord was usually soft and friable and the involved vertebrae were osteoporotic. In chronic paraplegia the lesions were ‘dry’ with very little pus and caseation but the cord was constricted by a thick, tough, greyish-white membrane.

Butler\(^9\) pointed out that the presence of tuberculous granulation tissue in contact with dura may cause degenerative changes in the cord, which appear to be the result of the general toxic and vascular reaction occurring in the vicinity of any active tuberculous focus. If this condition persists long enough the paralysis will be permanent.

In reviewing medical reports, there has been no large study on the results of surgical decompression in chronic tuberculous paraplegia, but it is evident from the smaller studies\(^5,\)\(^10,\)\(^11\) reported that paraplegia of > 9 months’ duration is associated with a poor prognosis. At present all our patients with chronic paraplegia undergo computed tomography (CT) and myelography. We have found this to be of prognostic value. Those patients who show an atrophic spinal cord and extensive fibrosis on CT and myelography usually do poorly after decompression. In the 3 patients with associated pregnancy in this study all had severe backache 6 months before pregnancy and all 3 had been treated for pulmonary tuberculosis in the past. Despite the paraplegia, all patients delivered at full term and decompression was successfully done within 2 weeks.

REFERENCES