

Tuberculosis of Cervical Spine

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Spinal tuberculosis is the most common and most dangerous form of skeletal tuberculosis. It constitutes about 50 percent of all cases of osteoarticular tuberculosis in any long series. In our institution cervical spine was involved in 14 percent of all cases of spinal tuberculosis [1]. The present paper is based upon the observations made on 141 cases of tuberculosis of cervical spine who attended the orthopaedic service of the Institute of Medical Sciences prior to 1982, and who could be adequately followed for a maximum of two years after stoppage of drugs.

Clinical Material

Age and sex

What is true of osteoarticular tuberculosis in general is also true of cervical spine tuberculosis. It is most common during first three decades and is almost equally distributed amongst the two sexes.

Clinical and radiological features

Majority of the patients reach the hospital when disease is fairly advanced and is easily diagnosed. The duration of symptoms at the time of presentation varied between 3 months to a few years. 50 percent presented within 9 months of the onset of their symptoms.

The commonest cervical vertebral site involved was C5 - C6. The frequency of involvement reduced gradually proximally and distally. The number of vertebrae involved was 2 - 3 in adults and 3 in children. Seven percent of cases had an additional concomitant tuberculosis lesion in another part of the spine.

Reversal of cervical lordosis or actual kyphotic deformity was present in 95 percent of cases. Half of the patients showed the presence of a prevertebral soft tissue shadow of varying size in X-ray. On an average in an adult the normal space between the pharynx and vertebral bodies above the level of cricoid cartilage is 0.5 cm and below this level it is 1.5 cm. Any localised increase in this space above these limits associated with a destructive lesion of the spine was considered significant. The increase in the size of the prevertebral shadow was upto 5 mm in 38 cases, between 6 to 15 mm in 26, and between 16 to 55 mm in 7 cases. Thirty four patients at the time of presentation had varying degree of neural deficit. 14 had quadriplegia and 20 quadriparesis. Six patients had difficulty in deglutition and change of voice because of a large retropharyngeal soft tissue swelling.

Management

Domiciliary regime:

We have been treating our patients by the middle-path-regime [2]. A large majority has been treated as out-door patients. Hospitalisation and surgery has been restricted to patients with neurological complications and to some of those who required drainage of huge prevertebral abscesses. A few patients with severe pain, muscle spasm and active disseminated tuberculosis lesions were also hospitalised for treatment of acute stage. Every patient after hospitalisation was put in cervical traction for 3 to 8 weeks to enforce rest to the cervical spine, reduce gross deformity, and muscle spasm.

Drugs

For an adult streptomycin one gram intramuscularly for about 3 months, ethambutol 1200 mg (20 mg per kg) as a single dose in the morning (or divided doses) for 12 to 18 months, isoniasid 300 to 400 mg as a single dose at bed time (or divided doses) for about 18 to 24 months were given. Doses and drugs were modified according to age, individual tolerance and the resistance/response of the disease. In the present scene it may be unrealistic to stick to one particular drug regime. Rifampicin is almost replacing the position of streptomycin, which may be employed only as a para-operative drug. However we consider it important to maintain the drugs for a minimum of one year, preferably 18 months and in some cases for 24 months. Supportive therapy in the form of balanced diet, vitamins and minerals were always continued. In non-responsive cases one of the drugs except (isoniasid) was replaced by pyrazinamide or any newer drug.

Radiographs and ESR

Radiographs and ESR were done periodically at 3 to 6 months intervals. Majority of the uncomplicated patients achieved normalisation of the ESR, and healing of the vertebral disease with sound bony or fibro-osseous replacement of the diseased area within 6 to 9 months.

Prevertebral abscesses or shadows:

All prevertebral abscesses were not drained. Drainage was incidental whenever decompression was done for neural complications or when debridement of the lesion was done. In the absence of indications for operation on the diseased vertebrae the abscess was drained under local (or rarely general) anaesthesia when it was complicated by difficulty in deglutition and respiration generally through the anterior triangle.

Rest and resumption of activity:

Most of the uncomplicated cases became painless and were free from the spasm between 4 to 6 weeks of the start of antituberculosis drugs and rest to the neck. These patients were then encouraged to be mobilised and resume normal duties (except head loading) and wearing a four-post collar. The collar was worn for 12 to 18 months. The collar was discarded when the lateral X-rays of cervical spine in flexion and extension showed no mechanical instability.

Operations :

Patients who did not show spontaneous neural recovery within 3 to 6 weeks or whose vertebral disease was not coming under control, or who were detected to have mechanical instability were subjected to surgery through anterior cervical approach. In the presence of neural complications decompression of the cord was considered mandatory followed by anterior interbody fusion. In the absence of neural

complications debridement and arthrodesis was performed through the anterior approach. Whenever the diagnosis was uncertain exploration was advised.

Results

Prevertebral abscesses:

Of the 71 cases who had radiologically detectable increased prevertebral shadows the drainage of the abscess was coincidental to decompression in 10 cases, debridement in one and the evacuation per se in 2 cases (for difficulty in breathing and deglutition). In the remaining cases the "abscess shadows" gradually resolved spontaneously within 6 to 12 months without inhibiting the process of healing of the underlying vertebral lesion. Less aggressive attitude towards radiologically demonstrable prevertebral soft tissue shadows is suggested.

Neurological complications:

Of the 34 patients who had neurological complications one died because of moribund general condition within 3 weeks of hospitalisation. Twenty two patients made complete neural recovery, starting within 3 to 4 weeks, by traction, drugs and rest. Eleven patients were surgically decompressed with anterior cervical arthrodesis. Of these nine recovered fully, one did not recover appreciably and one patient died four days after the operation (C3 to C5) probably due to proximal oedema and damage to the cord. Every case with neural deficit does not necessarily need a surgical decompression. It should be done in those patients who did not show progressive recovery within 3 to 4 weeks of conservative therapy or where the deficit was advanced (Power Grade III and IV).

Radiological healing of the diseased vertebrae:

Of the patients with classical paradiscal or metaphyseal variety of tuberculous spondylitis, followed for a period of 2 to 5 years after completion of treatment 70% of lesions had formed a spontaneous bone block and 30% had healed by fibro-osseous replacement of the diseased disc spaces. All the patients where anterior arthrodesis was done healed by bony fusion. No patient in the present series of tuberculosis from C2 to C7 shadow an increase of kyphotic deformity by more than 10 degrees, in fact in majority the deformity remained static.

Discussion

Universal surgical treatment for cervical spine tuberculosis was recommended by many workers [4] mostly on the supposition that the drugs are unable to gain access to the skeletal tuberculosis. However at present overwhelming evidence is available to show experimentally [5], [6] and clinically [7], [8], [9], [10], [11] that antitubercular drugs were indeed reaching the tuberculous abscess cavities, caseous material and tuberculous joints in effective concentrations. The clinical response of healing is so effective and uniform that the present drugs have made sanatorium treatment un-important and have obviated the necessity for universal surgical treatment. majority of the uncomplicated cases can be treated as outpatients with a suitable combination of antitubercular drugs and a four post collar. Surgery on the diseased vertebrae should be done for neural deficit not coming under control, for

tuberculosis lesions whose activity is not controlled, for mechanically unstable vertebral lesion and for doubtful diagnosis.

Comparisons between the operative treatment and those of non-operative treatment are valid only if the comparison is done of those series which are treated under the influence of modern antitubercular drugs. In general there is no significant difference recorded between the results of two regimes if the patients are followed for more than 5 to 10 years [12], [13].

Neurological complication is considered the most important indication for the operative treatment for cervical spine tuberculosis. The deficit due to inflammatory causes in tetraplegia of 'early onset' and that associated with 'active vertebral disease' has good chances of spontaneous recovery with antitubercular drugs, cervical traction and rest. However when the pathology causing neural deficit is predominantly mechanical such as localised internal salient, retropulsion of sequestered vertebral body or disc, or secondary cervical canal stenosis, surgical decompression is mandatory [1]. Nearly 64% of all the cases of neural complications associated with cervical spine tuberculosis recovered spontaneously by the use of drugs, traction and rest in our series.

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