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COMPARISON OF OUTCOME OF ANTEROLATERAL DECOMPRESSION AND ANTERIOR DECOMPRESSION FOR TUBERCULOSIS OF SPINE.

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ABSTRACT

Background : treatment of tuberculosis of spine has various modalities ranging from medical to various surgical form including just drainage of pus to only decompression and decompression with instrumentation. The goals of surgery include radical debridement of the infective focus. Use of anterior and anteriolateral both approach are described but this study focuses on their comparison.

Material and methods: 110 patients of both sex (68 male, 42 female) with tuberculosis of dorsal spine reviewed. Mean age of patients 42.3 years (.Patients were divided into three groups .Group I consists of 43 patients , group II consists of 30 patients and 37 patients in anteriolateral group.

Result: Correction of kyphosis and maintenance is better with anterior approach with instrumentation but it has more duration and blood loss as compared to anteriolateral approach . Neurological improvement is almost same in both approach.

KEYWORDS : anterior decompression, anteriolateral decompression, tuberculosis, instrumentation

Introduction:

Spinal tuberculosis is most common among skeletal tuberculosis. Management of tubercular spondylitis is not uniform throughout .[1]Chemotherapy is the main modality of treatment but chemotherapy not always corrects the problem because anti tubercular drugs can take care of tubercular infection but cannot address the resultant bone destruction, pre-existing and residual deformity, paraplegia, pulmonary insufficiency due to spinal deformity, spinal instability. Restoration of spinal stability is crucial in the management of spinal TB in many cases. Many times Kyphosis in spinal tuberculosis continues to progress with conservative treatment and about 3–5% of cases will have severe progression .[2] The common indications for surgical decompression are detoriation of neurological deficit during conservative treatment, the development of neurological defecit while patients are on antitubercular therapy, no neurological improvement on antitubercular therapy and complete paraplegia.[3,4] . Debridement and spinal fixation can be done through anterior, anterolateral or posterior approach along with bone graft and instrumentation. Spinal tuberculosis affects body of the vertebra in about 98% of the cases, hence surgical decompression when needed should be anterior[5,6] . In this study we compared the outcome of anterior debridement with bone grafting, with or without anterior instrumentation with the outcome of anterolateral decompression with no use of instrumentation.

Material and methods:

110 patients of both sex (68 male, 42 female)were reviewed. Mean age of patients was 42.3 years (20to 72). Patients were divided into three groups

group I with anterior decompression with instrumentation (n=43)
group II anterior decompression without instrumentation (n=30)
group III with anteriolateral decompression.(n=37)

Group I consists of 43 patients , group II consists of 30 patients and 37 patients in anteriolateral group. All patients gave informed consent for procedure and study. Outcome was analyzed in the form of neurological recovery, correction and maintenance of corrected kyphosis, duration of surgery, blood loss . Tuli's classification was used to classify neurology and cobb's angle was used to measure kyphosis. All the patients were given anti tubercular therapy according to standard protocol. All patients received general anesthesia.

For anterior decompression patient placed in left lateral position, access was gained to the involved vertebrae by means of thoracotomy and removal of rib. The abscess was drained if present and neural decompression was done with complete/ partial corpectomy of the destroyed vertebra leaving only a shell of bone of the opposite cortex. Before inserting the strut graft slots are made in the proximal and the distal healthy vertebral body. The kyphus is corrected manually by applying anterior pressure at its apex .When the pressure on the back of the spine is released, the graft is locked in position. Anterior instrumentation, when done was in the form of interbody screws in the proximal and distal normal vertebral bodies connected together with rods. Wound closure over a chest drain.

For anteriolateral approach patient placed in left lateral position access to involved vertebra was done through semilunar paravertebral incision. Abscess was drained if present and decompression of cord was done with complete / partial corpectomy of involved vertebra. Adequate decompression accessed intra operatively. Remaining gap was filled with resected ribs.

All patients were nursed in bed with regular turning at two hourly interval. Parental antibiotics to cover both gram positive and gram negative organisms were given after surgery. The chest tube was removed once the collection was less than 50 ml and noting the lung expansion in X ray chest .Post operatively X-ray dorsal spine was done to know the graft placement and decrease in the size of paravertebral shadow. All the patients received uninterupted multidrug anti-tubercular therapy for 12 months.

The statistical methods used were independent simple T test for improvement in local kyphosis, loss of correction and progression of kyphosis at 2 years.

Result: All patients showed good neurological recovery except for one in group I and two each in group II and III.

In group I mean pre operative kyphosis was 27.2 degree(50 to 16). Mean post operative kyphosis 9.0 degree (20 to 0) and mean kyphosis at follow up was 10 .3 degree. 52% correction as compared to pre operative kyphosis.

In group II mean pre operative kyphosis was 29.2 degree.Mean post operative kyphosis 19.5 degree and mean kyphosis at follow up was 28.6 degree. 2% correction as compared to pre operative kyphosis.

In group III mean pre operative kyphosis was 29.4 degree.Mean post operative kyphosis 29.0 degree and mean kyphosis at follow up was 40.4 degree.30 %increase in kyphosis compared to pre operative

kyphosis.

In group I average blood was 850 ml as compared to 700 ml in group II and 400 ml blood loss in group III.

Average duration of surgery was 180 minutes in group I as compared to 150 minutes in group II and 120 minutes in group III.

Two patients of group I needed intensive care postoperatively as compared to one and zero patients of group II and III respectively.

Discussion:

Many types of surgical approach have been described for debridement of caries spine but it is rather difficult to strictly compare the results of various series treated by operative treatment as clinical matter varies from center to center .Despite the good results of medical treatment kyphosis remains an unresolved problem especially when more than two disc spaces are involved. The various surgical procedures have been described for debridement and stabilization of tuberculosis of dorsal and lumbar spine.

- Transthoracic transpleural (anterior decompression)
- Extrapleural anterolateral decompression

The role of using spinal instrumentation in caries spine has two aspects to be followed. The first to be considered is about putting in a foreign body in an infected vertebral zone and it was found safe with antitubercular medicines.[7]

Subsequently it was thought, whether it is wise to put in posterior hardware only given the fact that the infected zone is basically the anterior structures and involvement of posterior element is not so common .[8] Subsequently it has been shown that anterior instrumentation also is safe as far as the problem of persistent infection relating to the usage of foreign body is concerned[9,10].

Radical debridement with anterior approach and anterior fusion along with anterior strut grafts has come up in a big way in management of tubercular spondylitis in the present era. As most of the spinal cord compression is usually located anteriorly, anterior approach and decompression is the preferred route for neural decompression .[11]

There are many studies in the literature that have demonstrated satisfactory results by anterior instrumentation providing several advantages[12,13]. Together with anterior fusion, additional anterior instrumentation has the following advantages: proper correction and stable alignment are maintained, graft-related complications are minimized. Spinal cord decompression is facilitated, good stability is provided. The patient does not need external support, so the rehabilitation is easier and quicker, complications related to the posterior procedure are eliminated, fusion is stimulated by rigid fixation[12] .

Jain et al. analysed all articles in which instrumented stabilisation was reported over the last 20 years. When anterior instrumentation (n=635) was used in tuberculous spondylitis, mean preoperative kyphosis was 25.35°, immediate postoperative kyphosis was 9.08° and final kyphosis was 12.97°. There was an overall 2.3° kyphosis progression after surgery.[14]In our study with anterior decompression and instrumentation Mean pre operative kyphosis was 27.2 degree(50 to 16). Mean post operative kyphosis 9.0 degree (20 to 0) and mean kyphosis at follow up was 10 .3 degree.

In Jain et al series 2004, 64 patients were operated with anterolateral decompression without any instrumentation. 90% patients improved neurologically but 10% patients showed no improvement. In the same series in 85% patients there was no significant change in kyphotic deformity.[15]In our study with anteriolateral decompression without instrumentation 95% showed neurological recovery but an average 11 degree increase in kyphosis was seen.

Conclusion:

Post operatively kyphotic progression was significantly less in instrumented group in anterior approach as compared to non instrumented group. Post operatively there was no significant difference in progression of kyphosis between anterior decompression without instrumentation and anterolateral decompression without instrumentation. The final neurology at follow up was same in all the three groups. The use of anterior instrumentation is safe in tuberculous spondylitis. With the use of anterior instrumentation, immediate postoperative local kyphosis correction and improvement in cosmetic deformity is better.In anterior group, late loss of correction of local kyphosis is less in instrumented group as compared with cases in which no instrumentation was done. In anterior decompression without instrumentation the correction of local kyphosis was better as compared to anterolateral decompression without instrumentation when latest kyphotic angle was compared with preoperative kyphosis. In the treatment of tubercular spondylitis by anterior decompression of the spinal cord and auto fibular strut grafting the use of instrumentation has no relation with the improvement in neurological status. The most important is thorough removal of all infective tissue and adequate decompression of canal.

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