

THE BALANCE PROBLEM OF PATIENTS TREATED WITH ANTERIOR FUSION IN POTT'S DISEASE

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ABSTRACT

This is a retrospective analysis of the clinical results and radiographs of 32 patients with Pott's disease treated with anterior fusion in terms of stability. The follow-up period was with a mean of 32 months (range, 6-66 months). There were gibbosity in all of our patients postoperatively. We observed loss of correction with a mean of 4.5 degrees postoperatively in 24 of our patients. During follow up, it was observed that bone grafts were all reabsorbed and could not maintain stability adequately. To prevent the development of instability and gibbosity that we observed during follow up because of loss of correction, increase in local kyphosis angle and reabsorption of bone grafts we recommend stabilization with instrumentation from either anterior or posterior at the same step or further especially in children and young adults.

Vertebral Tuberculosis is a known disease since Hippocrates. Up to the middle of this century, it was a major health problem all over the world. Today, it still remains as one of the problems of developing countries, vertebral involvement is commonly seen in the bone tuberculosis. Fifty percent of bone tuberculosis is composed of vertebral tuberculosis. Frequency of localization of the disease is thoracal, thoracolumbar, lumbar and cervical in decreasing order. This article mainly deals with the balance problems of the patients that we have operated because of vertebral tuberculosis.

MATERIAL AND METHOD :

We have evaluated 32 patients that we performed anterior decompression and fusion and who developed deviation in frontal plane and show increase in local kyphosis angle in their follow up. Mean age of the patients was 28.5 (range, 4-60). Of 32 patients, 21 were male and 11 were female. Eight of patients were below fourteen years of age.

Distribution of patients due to their age

Age	Number of Patients	Percentage
0-10 years	5 patients	15.6%
10-20 years	7 patients	21.8%
20-30 years	10 patients	31.2%
30-40 years	6 patients	18.7%

The most frequent localization of the disease is thoracal region. After then, thoracolumbar and lumbar region is affected in decreasing order.

Affected regions of the patients.

Thoracal	18	56.25%
Thoracolumbar	10	31.25%
Lumbar	4	12.50%

The mean follow-up period was 32 months (range; 6-66 months). All of the patients were diagnosed and treated with antituberculosis medication at an other center. One of our patients had undergone laminectomy at another hospital. There were general toxic signs of tuberculosis such as malaise, and fever, localised pain over vertebra and gibbosity in all of the other patients. We evaluated neurological signs due to Frankel Classification.

Frankel A	3	9.4%
Frankel B	4	12.5%
Frankel C	8	25.0%
Frankel D	14	43.7%
Frankel E	3	9.4%

As laboratory signs, ESR was high in all of patients and lymphocytic predominance in peripheric smear.

There were cold abscess view on x-ray at 21 patients. There were destruction in all diseased vertebra. On A-P and lateral view of vertebra, slipping to right or left and local kyphosis angle was measured. Scoliosis

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has occurred due to displacement from frontal plane. Local kyphosis angle at sagittal plane was minimum 10 degrees and maximum 36.5 degrees. Increase in this angle was directly correlated with the time passed between diagnosis and attendance. CT and MRI were performed for patients in Frankel A and B group.

In all of our patients, we performed anterior decompression and fusion. For fusion, we used costal graft in 26 cases with at least 2 grafts for each and three cortical bone graft from iliac crest in 6 cases. Three weeks after anterior decompression and fusion performed for the patient who had undergone laminectomy before, we performed posterior instrumentation for stabilization. For 5 children below 14 years of age, we performed only posterior fusion. Three weeks after anterior decompression and fusion, we put closed underwater drainage for cases at thoracic region. Drainage was ended with chest X-ray control. Patients were immobilized at their beds for fourteen days. Sutures were taken at fourteenth day. They were mobilized with cast brace. We discharged the patients from hospital after then. We treat all the patients with triple drug medication for tuberculosis (rifampicin, INH, pyrazinamid) for at least 9 months routinely.

RESULTS :

We controlled the patients every 3 months. Clinical evaluation, ESR and X-ray control was performed at each visit. We observed significant improvement from neurological aspect.

Frankel A	0	0.0%
Frankel B	0	0.0%
Frankel C	6	18.7%
Frankel D	8	25.0%
Frankel E	18	56.3%

Six patients complained from back pain. There were gibbosity in all cases and all were complaining from this deformity. We measured local kyphosis angle and slipping and evaluate the grafts and fusion by A-P X-ray. There were fusion in all cases. However in cases that we used costal grafting, grafts were reabsorbed. There were no difference between preoperative and postoperative signs in terms of slipping to right or left on A-P X-ray. On lateral view, there were loss of correction in 24 patients postoperatively. Mean loss of correction was 4.5 degrees.

DISCUSSION :

Vertebral tuberculosis is common at any age group in developing countries whereas it is only seen at older age group in developed countries. The treatment of the disease is composed of surgical drainage of the abscess, the extraction of sequestered bone and disc and appropriate antituberculosis medication with immobilization (7, 16, 17, 18). The mean immobilization period was 3 months and 12 days in the Hodgson and Stoc's study that has 100 patients with vertebral tuberculosis. Besides this, there are authors who accept only antituberculosis medication with immobilization as the ideal treatment of disease (15, 24, 28).

In vertebral tuberculosis, progression may be seen at local kyphosis angle after both surgical and conservative treatment (7, 12, 30, 35, 36). In vertebral tuberculosis cases that are treated with antituberculosis medication, it is reported that there is 10 degrees progression at local kyphosis angle for every 5 years (35, 35). In addition to this, in cases treated with anterior decompression and fusion, loss of correction and increase in local kyphosis angle with a mean of 1.5 degrees is observed because of graft collapse and slipping (26, 32).

During decompression, based on Denis three column theory, anterior and middle columns are extracted and an instability is created at vertebral column. This instability is similar with the one caused by burst fracture (8, 9, 22). For unstable burst fractures, Kaneda had used his own instrument for stabilization and fusion by using iliac graft at the same step. Also thoracolumbosacral orthosis were used for six months after operation (22, 23).

Most of the authors such as Denis, Dick, Kostjuk and Alici recommended decompression, fusion and spinal instrumentation in unstable burst fractures.

Instability created at vertebral tuberculosis was tried to be supported by iliac or costal grafts used mainly for fusion and by this way stability was tried to be created. Medical Research Council Working On Tuberculosis Of The Spine and authors reported that bone grafts could not maintain stability and during long term follow up, they were all reabsorbed and reabsorption of costal grafts were more than iliac grafts (24, 27, 29, 30). For this reason, they preferred iliac bone grafts. However, even though iliac grafts were used, loss of correction was observed.

Most of the authors recommend posterior and anterior stabilization with instrumentation either initially or after anterior decompression or fusion in patients with progressive increase in local kyphosis angle and in whom translation has occurred.

We accept the vertebra that we perform decompression as unstable burst fracture. To prevent the development of instability and gibbosity that we observed during follow up because of loss of correction, increase in local kyphosis angle and reabsorption of bone grafts, we recommend stabilization with instrumentation from either anterior or posterior at the same step or further especially in children and young adults.

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