

SURGICAL TREATMENT OF SPINAL TUBERCULOSIS WITH ALICI SPINAL SYSTEM

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The review of 24 patients with spinal tuberculosis treated with modified Hong Kong operation as described by Hodgson and Stock in 1960 plus anterior instrumentation with Alici Spinal System and chemotherapy between 1990-1994 in Dokuz Eylül University Hospital are evaluated in this article. The mean age was 44.75 and the mean follow-up was 25 months (12 months-65 months). Our results show that anterior debridement, grafting and anterior instrumentation provide immediate stability, protect the development of progressive kyphosis and gives better correction. No reactivation findings were seen and all patients were satisfied.

Key Words: Tuberculosis of the spine, anterior debridement, grafting, anterior instrumentation.

INTRODUCTION

Tuberculosis of spine has been recorded in ancient times and first written description was given by Hippocrates. Pott described it as a kyphotic deformity of the spine associated with paraplegia so that since 1779 it has been known as Pott's disease. Although it has been recognized for such a long time, its treatment has not been clearly specified.

In 1934 Ito et al (6) described technique of anterior fusion, then this technique was widely applied after Hodgson and Stock (4, 5) published their results in tuberculosis of the spine in 1960. They showed that radical excision of the tuberculous focus and repair of the resultant gap with autologous bone grafts was more successful than posterior grafting of Albee (1991) and Hibbs (1912) or the anterolateral exposure and grafting performed by Wilkinson (1950).

Many methods were put forward for the treatment of spinal tuberculosis by British Medical Research Council Working Party on Tuberculosis of the spine (10, 11, 12). These methods are plaster of Paris Jackets or hospital rest with long term antituberculous drug therapy, long term chemotherapy, debridement and chemotherapy, anterior spinal fusion and debridement combined with long term chemotherapy. 10 years results (12) showed that Modified Hong Kong operation with long-term chemotherapy gives better results. But some disadvantages were seen with this operation such as loss of correction because of the breakage of the graft and residual kyphosis (13, 14). For this reason many authors added anterior or posterior instrumentation to modified Hong Kong procedure.

MATERIALS AND METHODS

24 Patients with spinal tuberculosis were treated with modified Hong Kong operation plus anterior instrumentation and chemotherapy in Dokuz Eylül University Hospital between 1990-1994. 11 patients were female and 13 patients were male. The mean age was 44.75 (22-69). All patients were evaluated by Antero-Posterior and Lateral radiography, CT and MRI. Routine investigations of haemoglobin level, erythrocyte sedimentation rate, Mantoux test, sputum and urinary culture were done. The lesion was at thoracic level in 11 patients, thoracolumbar region in 6 patients and at lumbosacral region in 9 patients. In 18 patients two vertebrae were involved, in 4 only one and in 2 patients 3 vertebrae were involved. In pre-operative evaluation 4 patients had active lung lesion, 2 patients had urinary tuberculosis and 1 patient had neurologic findings that MRI demonstrated intramedullary abscess.

The patients that had active tuberculosis lesions were treated with standard antibiotic chemotherapy regimen 1 month before operation and continued approximately 18 months after operation. Other patients that had no active lesions were treated with 18 months chemotherapy regimen (Rifampicin 15 mg/kg-max: 600 mg., once daily; Isoniazid 6mg/kg-max: 300 mg., once daily, Ethambutol 15-25 mg/kg). The angle of kyphosis was mean 44.6 degrees.

Modified Hong Kong operation was performed in all patients and anterior instrumentation with Alici Spinal System was added to this procedure. Rib grafts or iliac grafts were used in all patients. The mean kyphosis angle was 21 degree postoperatively and the correction rate of kyphosis was %52.91. The follow-up of 15 patients were 25 months (12 months-65 months).

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RESULTS

Clinical and radiologic evidence of stable fusion was seen in all patients. Fracture of the graft especially wasn't seen. The angle of kyphosis at follow-up was mean 24.25 degree, loss of correction was mean 3.25 degree. The patients were free of symptoms and living a normal existence. No reactivation findings were seen both clinically and radiographically.

DISCUSSION

Tuberculosis of the spine in adults are different than those in children. The potential for repair progressively diminishes with age; healing by bony fusion occurs less often. Radiologically removal of caseous or sequestered materials isn't seen and collapse of affected vertebrae cause progressive kyphosis. This vertebral collapse in the thoracic region leads to structural changes of the chest wall and diminishes respiratory function.

The patients treated with chemotherapy alone have a risk of reactivation, in 1973 the Medical Research Council Working Party on Tuberculosis of the Spine declared %82-90 good results of medical therapy but local kyphosis increased 8-16 degrees (11). After Hodgson and Stock reported their findings in 1960 with anterior debridement and fusion. This procedure has been the choice for surgical treatment of spinal tuberculosis. The 10 year assessment of the Medical Research Council Working Party on Tuberculosis of the Spine showed that Hong Kong operation had definitive advantages. It produced early bony fusion and vertebral reconstitution (127).

In spinal tuberculosis it is not unusual that two or three vertebrae are involved. The failure of the graft is very common in patients who have a lesion involving more than two vertebral bodies as Rajasekaran et al stated (13, 14).

When the focus extended to more than two vertebrae radical debridement creates a large deficit in the anterior structures and the graft is subjected to overloading causes graft breakage.

Bailey et al (1) reported posterior arthrodesis if the anterior graft bridged more than two vertebral segments.

Kemp et al (7) perform a posterior fusion if there is destruction of two or more vertebral bodies.

Güven et al (2, 3) used single stage posterior approach and rigid fixation for preventing kyphosis for elective cases and declared good results and 3.4 degree loss of correction.

After Kostuik (8) performed anterior instrumentation in addition to anterior debridement, this procedure gained popularity. This kind of operation gives many advantages to the surgeon. First of all; it is a single stage operation. One can get better visualization of the lesion and radical debridement of the pathology can be done better. Better correction of kyphosis and maintenance of correction is gained. Most loss of correction occurs between 3rd. to the 18th. months because of the breakage of the graft. Anterior instrumentation prevents graft breakage and provides early mobilization.

Some authors state that placement of the implants into the disease focus may increase the risk of reactivation but recent studies (9) show that mycobacterium tuberculosis is less adhesive than other microorganisms and only a few biofilm covered microcolonies is observed at the implants.

In our series, good results were obtained at follow-up and there were no recurrences or persistence of infection. No collapse of grafted bone were seen. The loss of correction was mean 3.25 degrees similar with the literature. Complete debridement of infectious tissue and intensive antituberculous chemotherapy can eradicate tuberculosis infection of the spine, even though biomaterial is present.

Our results show that anterior debridement, grafting plus anterior instrumentation with chemotherapy provides immediate stability, protects the development of kyphosis and gives better correction.

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