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CLINICAL OUTCOME OF THORACOTOMY, ANTERIOR SPINAL DECOMPRESSION AND FIXATION WITH SCREWS AND RODS FOR DORSAL SPINE TUBERCULOSIS

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ABSTARCT

BACKGROUND: The posterolateral or transpedicular approach has been used extensively for the management of spinal TB. This approach is a viable and importantly a safe surgical option for ventral decompression in thoracic spine TB when followed by anti tuberculosis treatment for 18 months and immobilization in an alkathene shell for 3 months.

OBJECTIVE: To determine clinical outcome of thoracotomy, anterior spinal decompression and fixation with screws and rods for dorsal spine TB.

MATERIAL AND METHODES: This observational prospective study was conducted in Neurosurgery Department Lady Reading Hospital Peshawar from Mar 2013 to March 2014. All patients admitted with dorsal spine tuberculosis and undergone thoracotomy, anterior spinal decompression and fixation with screws & rods were included in the study while those having unstable dorsal spine due to the metabolic, neoplastic, traumatic pathologies & stable dorsal spine tuberculosis cases were excluded. Patients' age, sex, addresses, level of dorsal spine tuberculosis, pre operative signs & symptoms, per & post op complications and post op variations in clinical status were recorded on a designed proforma. Minimum 6 months follow up was done. Data was analyzed by SPSS version 17 and expressed in the form of tables and charts.

RESULTS: Total 24 patients were included in this study in which males and females were equal in number. The age range was from 15 to 50 years and mean age was 31.5 ±3.8 years. Backward & hilly areas patients 15(62.5%) were on the top. D7,8,9 levels had highest frequency of involvement 45.83 %(11) . Lower limbs weakness was present in all cases (100%) followed by back ache in 23 (95.8 %) while power >3/5,3/5 were noted in 22(75.4 %) followed by gibus formation in 29.3 % cases. Post operative improvement in pain and power was 100%, 62.5 % while complications occurred in 4 (16.7 %) cases having no mortality

CONCLUSIONS: Incidence of dorsal spine tuberculosis is more in backward hilly areas of KPK effecting lower part of dorsal spine and great improvement in power of lower limbs & pain occurs after thoracotomy, decompression, bone grafting with cage placement and fixation with screws and rods with acceptable mortality and morbidity

KEY WORDS: Dorsal spine tuberculosis, Thoracotomy, Anterior spinal decompression & stabilization with screws and rods, clinical outcome.

INTRODUCTION

First case of spinal tuberculosis (TB) was reported 5,000 – year - back in old Egyptian mummies, the first modern case of spinal TB was reported in 1779 by Percival Pott [1]. Spinal involvement occurs in less than 1% of patients with TB[2,3]. But the increasing frequency of TB in both developed and developing countries has continued to make spinal TB a health problem[2,4]. Spinal TB (Pott's disease) is the most common as well as one of the most dangerous forms of skeletal TB and accounts for 50% of all cases of skeletal TB. Although the thoracolumbar junction seems to be the most common site of the spinal column involvement in spinal TB, any part of the spine can be affected [5]. Furthermore,

the incidence of neurologic complications in spinal TB varies from 10% to 43% [1].

Spinal TB results from hematogenous spread from primary focus in lungs , lymph nodes ,etc[6]. Clinically patients of spine tuberculosis present with backache, malaise, loss of appetite and weight, night sweats and evening rise of temperature, neurological deficit in lower limbs, Spine is stiff and painful on movement with localized tenderness. Kyphotic deformity is seen in 95% cases the deformity may not develop in the early detected and less severe cases, as in the present case[9,10]. It may be difficult to make definitive diagnosis on clinico-radiological grounds alone, unless lesion is typically paradiscal and / or is associated abscess formation. Plain radiograph provides information about bones architecture, alignment of spine and Para spinal soft tissues shadows but definitive diagnosis is made by histological examination of the affected tissue [7]. MRI is important for making early diagnosis along with providing information about skip lesions, details of bony and soft tissue involvement, extent of extradural compression, presence or absence of meningeal involvement, cord changes , paradiscal involvement, destruction and abscess formation .CT scan provides more details about bony lesions and CT guided biopsy is extremely helpful for diagnosis before starting anti tuberculus therapy. If CT guided biopsy is not possible then Thoracoscopic / Laparoscopic biopsy may be done in thoracic and lumbar spine respectively[1,8].

Dorsal spine tuberculosis is managed both conservatively and surgically. Conservatively patients is treated by ATT & analgesics[11,12]. Indications for surgery include severe dorsal or back pain and/or radicular pain resistant to conservative treatment, neurologic deficits associated with bone destruction, sequestered bone and disc, cold abscess, instability, and progressive deformity[13,14]. The aim of surgical treatment is radical debridement, decompression of the spinal cord and reconstruction of spinal stability. Surgically dorsal spine tuberculosis is treated by anterior and posterior/ posterolateral approaches. Anterior approach is done for upper dorsal cervical spine by doing partial or complete sternotomy and posterior or posterolateral approaches are done for mid and lower dorsal spine tuberculosis [15,16].

Rationale;- Although dorsal spine tuberculosis is increasing in developing countries but in our region like KPK it is much more prevalent because of large burden of afghan which are treated in our hospitals . Doing this study will help us to provide statistically data about TB spine furthermore the results of our study on comparison with international studies will show the pros and cons of treatment and this will be a step for best patient care and to improve our management according to international guidelines .

MATERIAL AND METHODES

The ethical approval was taken from the hospital ethical committee, "Postgraduate Medical Institute, Institutional Research and Ethics board".

This observational prospective study was conducted in Neurosurgery Department LRH Peshawar from Mar 2013 to March 2014. All patients admitted with dorsal spine TB and undergone thoracotomy, anterior spinal decompression and fixation with screws & rods were included in the study while those having unstable dorsal spine due to the metabolic, neoplastic, traumatic pathologies & stable dorsal spine tuberculosis cases were excluded. Patient's age, sex, addresses, level of dorsal spine tuberculosis, pre op signs & symptoms, Per & post op complications and post op variation in clinical status were recorded on a designed proforma. Minimum 6 months follow up was done. Data was analyzed by SPSS version 17 and expressed in the form of tables and charts.

All the patients were evaluated by detailed history and examination and relevant investigations including x rays, computerized tomographic (CT) scan and MRI of dorsal spine were carried out

(Fig no 5,7). All admitted patients for surgery were medicated with ATT during ward admission along with analgesics.

Before surgical intervention patients were subjected to pre-operative preparation, like complete blood count (CBC) and viral serology (HbsAg and Anti-HCV Ab) was done. Blood and surgical disposables were arranged accordingly. An informed consent was taken, explaining the prognosis. Clinical outcome of thoracotomy , anterior spinal decompression and fixation with screws and rods for dorsal spine Tuberculosis was revived .

RESULTS

Total 24 patients were included in our study in which males and females were equal in number Fig No 1. Majority of the patients were in 3rd -6th decades having frequency of 16 (66.66%) Fig no 2. Regarding level of involvement lower dorsal spine was mostly effected and D8-D9 was most common level of involvement in lower dorsal spine having frequency of 25 %(6) cases Fig no 3. Based on symptoms and signs the most common symptoms were lower limbs weakness and backache having 100% , 95.83%(23) cases while in signs sensory loss was present in all cases (100 %) and spastic lower limbs in 19 (79.16%) cases Fig no 4,5 .

When the patients were followed for 6 months post operatively we found that 15 (62.5%) patients were improved 1 or 2 Frankle grades and all patients (100 %) showed improvement in backache. In post operative complications 2(8.33%) cases were of wound infection, while 1 (4.16%) cases was of implant failure, wrong placement of implant and 1 Frankle grade deterioration for each Fig No 6.

Fig No: 01 N=24 Gender wise distribution of patients

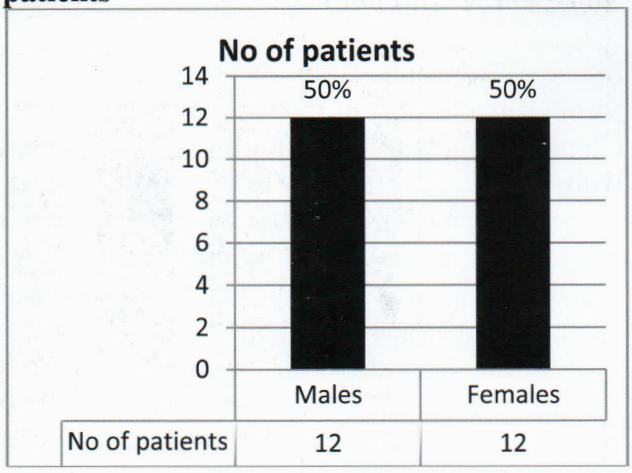


Fig No: 02 N=24 Age wise distribution of the patients

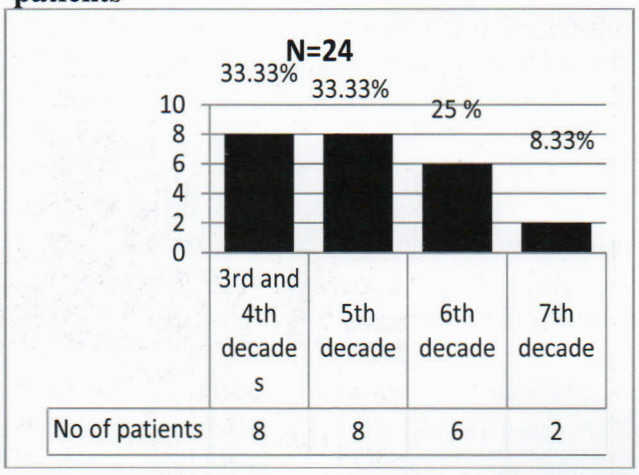


Fig No: 03 N=24 Level of involvement of dorsal spine tuberculosis

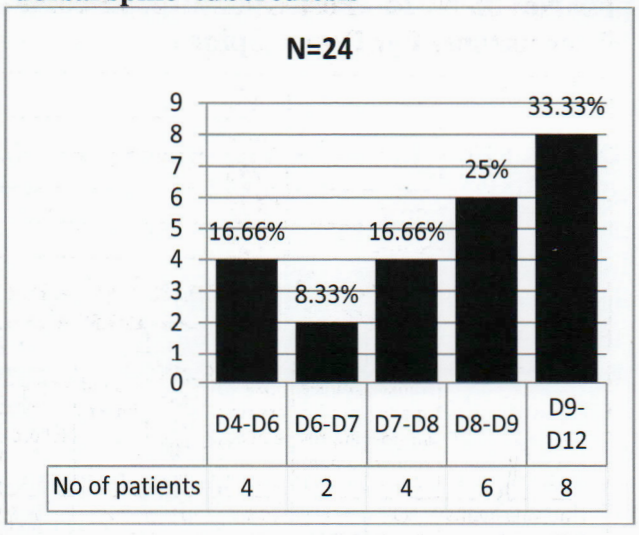


Fig No: 04 N=24 Pre operative symptoms of dorsal spine tuberculosis

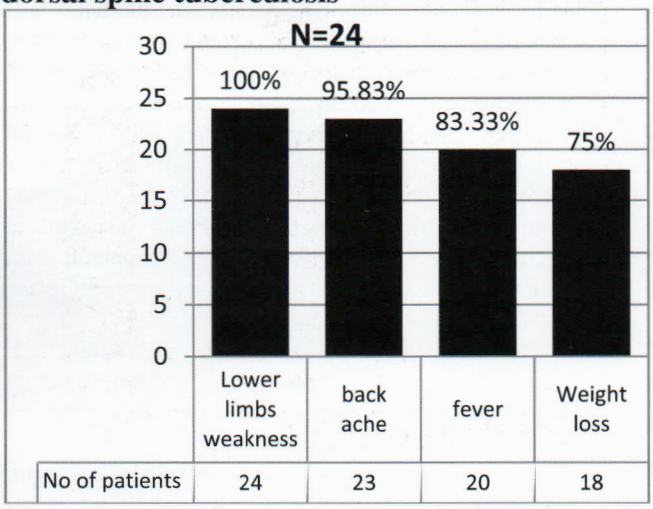


Fig No: 05 N=24 Pre operative signs of dorsal spine tuberculosis

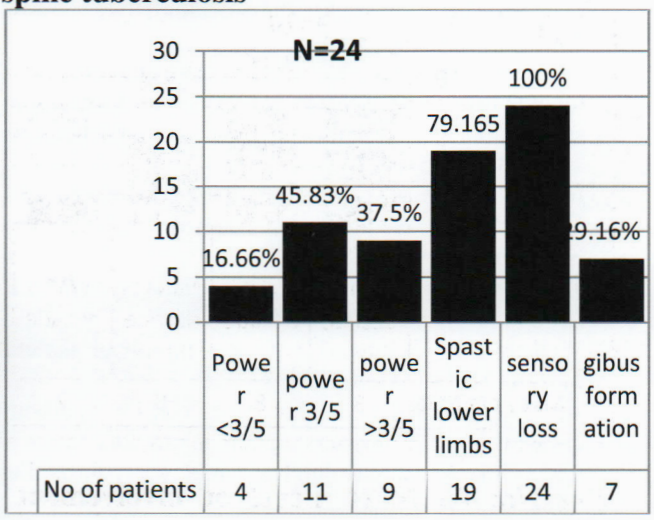
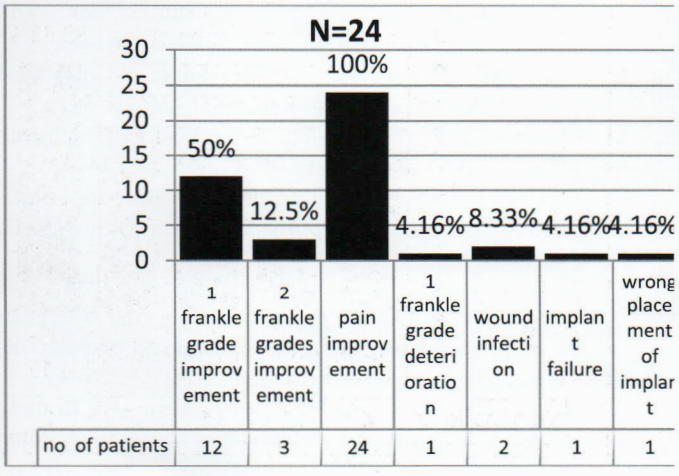


Fig No: 06 N=24 Post Operative Outcome of Thoracotomy For Dorsal Spine



DISCUSSION

Two types of surgical procedures are performed for Potts disease. One is debridement of the infected material. In this form of surgery no attempt is made to stabilize the spine. The other procedure is debridement with stabilization of the spine (spinal reconstruction). This is a more extensive procedure and the reconstructions are performed with bone grafts. Stabilization may also be done using artificial materials like steel, carbon fiber, or titanium[17].

On analysis of results and comparison with both local and international studies both resemblance and controversies were found this is because of the demographics of a disease and outcome of a surgical procedure varies from set up to set up and region to region of the world .Based on age , gender and level of dorsal spine involvement majority of the patients in our study were in age range of 3rd-5th decades with frequency of 16 (66.66%) , male; female was 1;1 and lower dorsal spine was involved in it with maximum number of cases of D8-D9 having frequency of 6(25%) . Dia LY and colleagues [18] has showed in their study that majority of cases of the dorsal spinal tuberculosis occurs in 3rd-5th decades this is in accordance to our results. Similarly Jain AK[19] in their study has documented the male; female ratio as 1;1 .

In studies like Ali M[21] and Kim DJ[20] and colleagues has documented lower dorsal spine as the common site for involvement of dorsal spine tuberculosis and D7,8,9 levels are most commonly involved in that area which is accordance to our results .In our study patients were assessed pre operatively by history and clinical examination we found that pre dominant symptoms of patients were lower limbs weakness and back ache having cases of 24 (100%) and 23 (95.83%) while the most common sign which was documented was paralysis of lower limbs 24(100%) with different grades . Hsu LC and colleagues [22] has showed in their study that lower limbs weakness was the presenting complaint having frequency of 100% while the predominant sign was document in all

patients was decreased power in both lower limbs and different grades having frequency of 100% which resembles the results of our study.

According to the Ali M[21] the frequency of lower limbs weakness was 76 % which is less than our study. The reason for this is that majority of population in our region is less educated and has a very little knowledge about the diseases and its complications so that present late to the health care facilities with more advanced stage of the disease. When patients were operated they were followed till to the 6 months period to document good and poor outcome. At the end it was noted that 15(62.50%) patients improved in terms of frankle grades while all patients (100%) improved back pain. Hsu LC and colleagues [22] has showed in their study that post operatively all patients (100%) improved back pain while 94.44% patients improved in lower limbs weakness.

The improvement in lower limbs weakness in study of Hsu LC and colleagues [22] is mainly due to the reason that they followed the patients for total 3 years duration while In our study total post operative follow up was 6 months. Total 5(20.81%) patients complicated post operatively in which 2(8.33%) cases were of wound site infection and 1(4.16%) case was of wrong placement of implant failure and 1 frankle grade deterioration for each of the two. Mortality in Hsu LC and colleagues [22] study was 1(5.55%) and this was a case of silent MI which deteriorated after surgery expired on 2nd post operative day but in our study no patient had co morbidity which was responsible for mortality. In our study no mortality was documented.

CONCLUSION

Dorsal spine tuberculosis is common in low socioeconomic status population and thoracotomy , decompression and fusion is safe and cost effective procedure if carried by experienced hands early in the disease when surgically indicated.

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