

POTT'S DISEASE RETROSPECTIVE EVALUATION OF RESULTS

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ABSTRACT:

The results of 28 operations on 24 patients in whom the diagnosis was confirmed histologically as Pott's disease is evaluated retrospectively. 11 patients were female and 13 patients were male and the average age was 30.3 years ranging between 5 and 70 years. The mean follow-up was 19 months (3-60 months). The surgical procedures were performed in the Orthopaedic Clinics of Ankara Social Security Hospital between May 1989 and February 1994. Ten patients had anterior drainage only, while 4 had anterior drainage + anterior bone grafting. 3 had posterior instrumentation and fusion after having an anterior drainage in the first operation, 4 had posterior instrumentation and fusion only, 1 had anterior decompression and bone grafting + anterior instrumentation, 1 had anterior decompression after posterior instrumentation and fusion in the same session and one patient had only biopsy from the posterolateral structures of the spine. One patient had anterior drainage from the posterolateral structures of the spine. One patient had anterior drainage from both sides of the lumbar region with an interval of two months because of two separate masses of cold abscess. Eight patients had neurological deficits preoperatively in different severities, five of which completely resolved while two of them improved postoperatively. One patient died in the early postoperative period. At the last follow-up, the patients were evaluated neurologically, functionally (returning to work and daily activities) and radiologically. The conclusion is that the better and sooner the debridement, the better and more satisfactory the outcome.

INTRODUCTION

Pott's disease or tuberculous spondylitis is a common manifestation of tuberculosis which is still prevalent in many parts of the world. Several studies have been reported on the diagnosis and treatment of the disease (1-4, 6, 10-12, 15).

Effective combination of chemotherapy regimens reduced the mortality rate below 3 percent although the rate of paraparesis still remained constant about 20 percent (9). Excellent results have been reported with chemotherapy but radical debridement and anterior fusion has also been advocated (1-5, 9-15). The choice of treatment depends on the severity of destruction and symptoms but surgical treatment and instrumentation seems to augment the effectiveness of chemotherapy as spontaneous fusion is reported to be rare (2, 3).

MATERIALS AND METHODS

This study evaluates of 29 operations on 24 patients in whom the diagnosis was confirmed histologically as Pott's disease (Table - I). 11 patients were male and the average age was 30.3 years ranging between 5 and 70 years. The mean follow-up was 19 months (3-60 months).

The surgical procedures were performed in the 1st and 2nd Departments of Orthopaedics and Traumatology of Ankara Social Security Hospital between May 1989 and February 1994. Ten patients had anterior drainage only, while 4 had anterior drainage + anterior bone grafting, 3 had posterior instrumentation and fusion after having an anterior drainage in the first operation, 4 had posterior instrumentation and fusion only, 1 had anterior decompression and bone grafting + anterior instrumentation, 1 had anterior decompression and bone grafting after posterior instrumentation and fusion in the same session and one patient had only biopsy from the posterolateral structures of the spine. One patient had anterior drainage from both sides of the lumbar region with an interval of two months because of two separate masses of cold abscess.

Eight patients had neurological deficits preoperatively, five of which completely resolved while two of them improved postoperatively. All four patients who had Frankel Grade D neurological status preoperatively were accepted as normal (Grade E) at the last follow up. Two of the four patients who were accepted as Frankel Grade C preoperatively became Frankel Grade D and one of the others became Frankel Grade E postoperatively. The last one died in early postoperative period. There was no deterioration of neurological status at the last follow-up.

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Table 1. Clinical Evaluation of the Patients. (AF : Abscess Formation, ND : Neurologic Deficit, AD : Anterior decompression and debridement, PI : Posterior Instrumentation, TSRH : Texas Scottish Rite Hospital System, AOIF : AO Internal Fixateur, F.: Foraminotomy, PD : Posterior laminectomy)

| No | Patient | Sex | Age | Spinal Level | AF | ND | Surgical Treatment |
|----|---------|--------|-----|--------------|----|----|-----------------------|
| 1 | AD | Male | 28 | L1 - 2 | + | - | AD + PI (TSRH) |
| 2 | KK | Male | 34 | T8 - 10 | + | + | AD + AI (Z plate) |
| 3 | HA | Male | 46 | T7 - 8 | - | + | AD + Strut graft |
| 4 | MI | Female | 38 | L - 2 | - | - | AD (Bilateral) |
| 5 | AT | Male | 23 | L1 - 2 | + | - | PI + AD - Strut graft |
| 6 | RC | Male | 52 | T12 - L1 | + | - | AD |
| 7 | MH | Female | 49 | L - 3 | + | - | Posterior biopsy |
| 8 | ŞY | Male | 12 | T10 - 12 | - | + | PD + HRSF |
| 9 | EN | Female | 5 | T12 - L2 | - | - | AD |
| 10 | FA | Female | 6 | T10 - 11 | + | + | AD + Strut graft |
| 11 | ZK | Female | 12 | L - 4 | - | + | AD + Strut graft |
| 12 | MY | Female | 22 | T12 - L1 | + | - | AD + Strut graft |
| 13 | TM | Female | 19 | T 12 | + | - | AD |
| 14 | AD | Female | 43 | L1 - 2 | + | - | AD |
| 15 | NÇ | Female | 27 | L1 - 2 | + | + | AD |
| 16 | RB | Male | 24 | L - 2 | + | - | AD |
| 17 | AY | Male | 70 | T12 - L2 | - | + | AD |
| 18 | EA | Male | 50 | L2 - 3 | + | - | AD |
| 19 | HE | Female | 18 | T12 - L3 | - | - | AD |
| 20 | MK | Male | 42 | T10 - L1 | - | + | PI (TSRH) |
| 21 | TA | Male | 14 | L - 2 | + | - | AD + PI (TSRH) |
| 22 | ŞT | Male | 18 | L1 - 2 | + | - | PI (TSRH) |
| 23 | MV | Male | 41 | T12 - L1 | + | - | PI (AOIF) + L4-5 F. |
| 24 | TK | Female | 37 | L1 - 3 | - | - | AD + PI (TSRH) |

All patients had standardized antituberculous chemotherapy for 9 to 18 months in different combinations such as tri- or quadritherapy (Isoniazid, rifampin and ethambutol or isoniazid, rifampin, ethambutol and pyrazinamide) regimens.

All patients were advised to use either a cast brace or a custom made mold brace for a 6 to 9 month period postoperatively.

RESULTS

The mean number of vertebrae involved was 2.1 ± 0.8 and L1 - L2 were the most affected segments (Table 2).

Five of the patients had one or more other organ involvement. The onset of symptoms before the operation such as back pain and neurologic symptoms

was eight months ranging from three to 14 months. Almost all patients had physiotherapy and used NSAID before their admittance to our clinics.

Cold abscesses were present in fifteen patients. In four patients part of abscess mass was above the diaphragma level but they were easily removed by lumbar approach. One patient had only thoracal abscess at T8-10 level which was handled anteriorly by transthoracic approach.

The instrumentation system used was TSRH implants in 6 patients, AO fixator intern in one patient and Harrington instrumentation in one patient posteriorly. As anterior instrumentation "Z plate" was used in one patient with L1-2 involvement.

One patient had bilateral lumbar anterior surgical drainage in a two month period because the abscess

Table 2. Number Of Involvement Of Spinal Segments (Total 49)

| Vertebral Level | No. of Involvement |
|-----------------|--------------------|
| T - 7 | 1 |
| T - 8 | 2 |
| T - 9 | 2 |
| T - 10 | 4 |
| T - 11 | 3 |
| T - 12 | 9 |
| L - 1 | 12 |
| L - 2 | 12 |
| L - 3 | 3 |
| L - 4 | 1 |
| Total | 49 |

masses were separate although they seemed to have a connection in preoperative MRI graphics.

The oldest patient in the study was a 70 year old man whose symptoms such as back pain and difficulty in walking started about a year ago. After being seen by several internists, physiotherapists and even by orthopaedic surgeons he admitted to our clinic as a non-ambulatory patient with sphincter disorders and bilateral motor deficits below T12 level. MRI studies showed the destruction of vertebrae and he got full dose-wide spectrum antibiotic therapy regimes including antituberculous agents. His condition seemed to be worsened after a one week therapy so it was decided to operate him in order to maintain effective debridement and mobilization. After having a T11-L3 instrumentation he was turned to his side and anterior debridement and iliac crest strut graft was utilized. Though everything seemed to be under control postoperatively he died from cardiopulmonary arrest 6 hours later.

An eighteen year old girl had a 45° kyphotic deformity at the thoracolumbar junction and she complained of back pain and stiffness of spinal motions. Direct radiograms showed no bony lesion and the disc spaces were in normal ranges except in ESR of 126 mm/hour and CRP (+++). MRI showed no abscess formation but some destruction around L1 body and

CT showed severe destruction of posterior and posterolateral elements of T12, L1, L2 and L3 and mass in the canal. All findings directed to a metastatic tumor because disc spaces were preserved both in CT and MRI, but no origin could be found. The diagnostic biopsy from the transverse processes, spinous processes and laminae of T12 and L1 was reported absolutely as tuberculous spondylitis. Her symptoms improved by chemotherapy and brace treatment of three months which was her latest follow up.

All 23 patients returned to work and daily activities. Eight of these patients had been operated within six months from the onset of symptoms (Group - I) and the remaining sixteen had been operated six to fourteen months later from the onset of symptoms (Group - II). The patients in the first group returned to work in a mean period of 10.2 ± 4.3 weeks (8 to 13 weeks) and the patients in the second group returned to work in a mean of 14.1 ± 7.6 weeks (9 to 20 weeks). The difference was statistically significant ($p < 0.05$).

18 patients had follow-up more than 6 months. Six of these patients were in Group I and twelve were in Group II. The fusion took 8.2 ± 5.3 months (mean) from the time of surgery for Group I and 10.3 ± 6.89 months (mean) for Group II. The difference was insignificant. The functional results at the last follow-up are seen in Table 3.

Table 3. Functional Results at the last follow-up.

| | Number of Patients | | | |
|-------------------------------------|--------------------|------|----------|------|
| | Excellent | Good | Adequate | Poor |
| Pain relief | 16 | 5 | 2 | — |
| Walking without a support | 15 | 3 | 2 | 3 |
| Ability to perform daily activities | 17 | 6 | — | — |

There was no major complication except the death of one patient who would probably be lost even he has not been operated. The mean increase in radiologic kyphosis deformity at the last follow up was $8.4^\circ \pm 1.3^\circ$ for the uninstrumented patients. There was no increase for the instrumented ones. Three patients suffered from drainage of purulent materials from lumbar fistulas in their visits and two of these resolved by time. One patient still had a draining fistula on her fourth month follow up.

DISCUSSION

Though Pott's disease is not a horrifying disease as it was before the advent of antituberculous chemotherapy it still makes severe destruction of vertebrae, acute angled local kyphosis and severe neurological problems if diagnosed late. Fortunately Pott's disease forms a considerably benign neurological impairment in general, although high rates of mortality and paraplegia have been reported (2, 3, 6-8, 14).

It is a disease of elderly in developed countries while it can be seen at any age in developing countries especially among poor people (1, 8, 14).

The symptoms receded in all patients whatever the treatment is. Five of the seven patients with neurologic deficits (the patient who died in the early postoperative period is excluded) had full recovery (71.4 %), and all seven had improved neurological findings (100 %). Pain relief was good or excellent in 21 patients (91.3 %) while 18 patients (78.3 %) walked well without a support. Ability to perform daily activities was 100 per cent.

Abscess formation is accepted as a surgical indication and anterior approach is generally used. It has been reported that abscess masses may drain spontaneously unless they are surgically debrided.

In this series the patients who had cutaneous fistulas also had drainage before their admission. Fifteen patients had cold abscesses (62.5 %).

This study includes the surgically treated patients. The indications for surgery were neurological impairment, spinal instability, presence of abscess formation or failure of medical management although some authors do not accept neurological impairment alone as a surgical indication (12). Drug therapy alone may give favourable results but the increase in kyphosis by more than 10 degrees may go up to 19 per cent (15). Because that the number of patients are few and the indications for the type of surgical interventions are different we can't have any idea of the effect of chosen treatment on the neurologic, functional and medical outcome.

As a conclusion the patients who had drainage of the abscess and debridement of the destructed vertebrae sooner returned to work earlier and the instrumentation of the fusion levels either posterior or anterior prevents the progression of kyphotic deformity.

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