Original Article

# Frequency of Carries Spine in Patients of Tuberculosis with Different Age Groups Gender and Spinal Levels in Pakistan



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## ABSTRACT

**Objective:** To determine the frequency of carries spine in patients of Tuberculosis with different levels of spine, different age groups and gender in Pakistan.

**Study Design:** Observational study

**Place and Duration of Study:** This study was conducted at the Orthopaedic department at Mohi-ud-in teaching hospital of Mohi-ud-in Islamic Medical College Mirpur AK for three years from Jan. 2015 to Dec. 2017.

**Materials and Methods:** In this study we included 1000 cases of Tuberculosis out of which 30 consecutive patients of spinal tuberculosis with age groups ranging from 02 to 70 years of either sex, involvement of different spinal level with apparent vertebral lesion on radiograph, presence of mycobacterium tuberculosis on direct examination or on culture of material taken by biopsy, characteristics histology of tuberculosis ad positive response to ATT drugs even without bacteriological proof. The detailed history investigations included blood C/P, ESR, Monteux, Test, X-Ray chest PA view, X-Ray spine, CT scan spine, Bone scan, MRI of spine.

**Results:** The overall incidence of spinal TB was 3% and the highest incidence of carries spine was found in the age group of 11-20 years and was 36.63%.The sex ratio of male to female was 1:1.3. The spinal level with the highest incidence of tuberculosis involvement of spinal level was lower thoracic regionT9---12

**Conclusion:** The anti tuberculosis chemotherapy had to be extended upto one and a half year in three patients because their ESR values were not decreased to the normal and their radiological healing was not satisfactory.


**Key Words:** carries spine, spinal level

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## INTRODUCTION

Tuberculosis is common in Pakistan and spinal involvement by the disease is also not uncommon. The spine is the commonest site for the involvement of osseous TB. The incidence of carries spine among the TB patients has been reported from 1-5%.[1] The patients with carries spine usually present with advanced disease due to ignorance, lack of medical services and maltreatment by quacks. It is to find out the incidence of TB spine with different age group gender and spinal Level in patients of Tuberculosis in our local population presenting t**o** Mohi-ud-in Teaching hospital.

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## MATERIALS AND METHODS

This observational study was carried out at Mohi-ud-din Hospital of Mohi- ud-din Islamic Medical College Mirpur Azad kashmir over a period of three years, Jan 2015, 2016, December 2017. The criteria which was observed to include a case in the study was following:

**Typical Presentation of Carries spine by involvement of two adjacent vertebrae**

(i) The apparent vertebral lesion on radiograph.

(ii) The presence of Mycobacterium tuberculosis on direct examination or culture of material taken by biopsy.

(iii) The characteristic histology of tuberculosis

**A Tubercle, showing epitheloidcells, langhans giant cells and peripheral lymphocytes**

(From Pathological Bases of Diseases by Robins)

(iv) Positive response to anti tuberculous drugs even without bacteriological proof.

The fulfilling of any one of the above mentioned criteria is sufficient to enable a case to be included in the study. The detailed history was taken and thorough clinical examination of every patient was done. The investigation, which was done in routine, is the following:- i) Blood complete examination CP,ESR.

ii) Monteux test.

iii) X.Ray chest PA view (postero Anterior)

iv) Spinal X.Ray Antero-posterior(AP)view and lateral view.

The culture and sensitivity along with histological examination of biopsy material was done in every case. CT-scan, MRI, Bone scan was not done in every case. A haemoglobin level of less than 12g/dl was taken as anemia. The ESR of more than 30mm after 1st hour by wester green method was taken as raised. In case of Monteux test, the in duration of more than 10mm after 72 hours was taken as positive response. The TLC of more than 11000/cub.mm was considered as raised and lymphocyte count of more than 40% was labeled as raised count. The anti-tuberculous chemotherapy was started immediately when there was strong clinical evidence of tuberculosis based on raised ESR, characteristic radiological appearance and positive Monteux test. The chemotherapy was used to be started with four drugs regimen which included Rifampicin, Ethambutol, Isoniazid and Pyrazinamid. Pyridoxine with the dose of 25mg/day was also added to the antituberculous chemotherapy. In young children streptomycin was used instead of Ethambutol. Pyrazinamid was given for eight weeks while Ethambutol was given usually for 3months.Rifampicin and isoniazid were continued until nine months, but with the sign of radiological healing and two consecutive normal reading of ESR, which was used to be done on monthly basis considered to be sufficient to complete the treatment.

**The Investigations Done for the Carries Spine.**

| S. No. | Investigation | No.of cases | %age | Mean |
|---|---|---|---|---|
| 01 | Anemia | 26 | 86.58 | 10.63gm% |
| 02 | Raised TLC | 11 | 36.63 | 8000/mm3 |
| 03 | Raised ESR | 28 | 93.04 | 76.83 mm |
| 04 | Raised Lym-phocyte Count | 17 | 56.61 | 41% |
| 05 | Positive Monteux Test | 27 | 89.91 | 15 mm |
| 06 | Positive X-rays Chest | 06 | 19.98 | -- |
| 07 | Positive X-rays Spine | 29 | 96.57 | -- |
| 08 | C.T Scan | 00 | 00 | -- |
| 09 | Bone Scan | 00 | 00 | -- |
| 10 | M.R.I | 00 | 00 | -- |

# RESULTS

The patients from almost every age group were presented in this study. The range of age 2 -70 years. The mean age was 29.6 years. The mean age for male was 30.46 years while that for female was28.94 years. The highest incidence of carries spine was found in the age group of 11-20 years(36.63%) while the second highest was found in the age group of 21-30 years (19.98%). It indicates that mostly the young people were suffered from this disease. The incidence of carries spine is low in extremes of age because two age groups 0-10years and 61-70 years had only one case in each (Table 1).

**Table No.1: The age incidence for carries spine.**

| S.No. | Age Group | No. of cases | %tage |
|---|---|---|---|
| 1 | 1Day – 10 years | 01 | 3.333 |
| 2 | 11 – 20 years | 11 | 36.33 |
| 3 | 21 – 30 years | 06 | 19.98 |
| 4 | 31 – 40 years | 05 | 16.65 |
| 5 | 41 – 50 years | 03 | 9.99 |
| 6 | 51 – 60 years | 03 | 9.99 |
| 7 | 61 – 70 years | 01 | 3.33 |
| 8 | 71 – 80 years | 00 | 00 |

Patients presented with variety of symptoms as listed in table 1. Generalized weakness, anorexia and weight loss was present in majority of cases. The spinal deformity was foundin most of cases and among the spinal deformities Kyphosis was the most common one. Backache, local tenderness and spinal movement restriction were found in every case. Neural deficit was present in most of the cases and majority was suffered from paraparesis. The total paraplegia was found in few cases and it was of spastic type only. The incidence of sphincters involvement is also not so high. The tuberculous involvement of other body system along with carries spine was also present and it was the involvement of respiratory system mostly which was noted in this study.

**Table No. 2: Clinical Presentation**

| S. No. | Clinical Presentation | No. of cases | %age |
|---|---|---|---|
| 1. | Generalized Weakness | 30 | 100 |
| 2. | Anorexia | 26 | 86.66 |
| 3. | Weight Loss | 27 | 90 |
| 4. | Night Sweats | 16 | 53.33 |
| 5. | Afternoon Fever | 20 | 66.66 |
| 6. | Spinal Deformity | 27 | 89.91 |
| 7. | Scoliosis | 00/27 | 00 |
| 8. | Kyphosis | 23/27 | 85.10 |
| 9. | Kypho-scoliosis | 02/27 | 7.40 |
| 10. | Lordosis | 02/27 | 7.40 |
| 11. | Backache | 30 | 100 |
| 12. | Distant Radiation of Pain | 19 | 63.27 |
| 13. | Local tenderness | 30 | 100 |
| 14. | Spinal Movements Restriction | 30 | 100 |
| 15. | Thickening of Soft Tissues about the Spine | 19 | 63.27 |
| 16. | Tracking of Pus | 02 | 6.66 |
| 17. | Paraesthesia | 21 | 69.93 |
| 18. | Paraparesis | 21 | 69.93 |
| 19. | Paraplegia | 04 | 13.32 |
| 20 | Spastic | 04/04 | 100 |
| 21 | Flaccid | 00/04 | 00 |
| 22. | Paresis of Upper Limbs | 01 | 3.33 |
| 23. | Sphincter's of Upper Limbs | 02 | 6.66 |
| 24. | Other Systems Involvement | 06 | 20 |
| 25. | Respiratory System | 06/06 | 100 |
| 27. | C.N.S | 00/06 | 00 |
| 28. | G.I.T | 00/06 | 00 |
| 29. | Genito-urinary System | 00/06 | 00 |

**The Sex Preponderance:** In this study out of 30 patients 17 were female while 13 were male with the male to female ratio 1:1.3 given table 3.

**Incidence of spinal levels involvement:** The spinal levels with the highest incidence of tuberculous involvement was lower thoracic T9-T12.While the Second highest incidence found in mid-thoracic T5-T8. The proportion of patients with spinal involvement at different spine levels in give in table 4.

**Table No.3: The sex preponderance**

| Sex | No. of Cases | Percentage |
|---|---|---|
| Male | 13 | 43.29 |
| Female | 17 | 56.61 |

**Table No. 4: The incidence of spinal level involvement by carries**

| S.No. | Spinal Level | No. of Cases | %tage |
|---|---|---|---|
| 01 | Upper Cervical (C1-C4) | 00 | 00 |
| 02 | Lower Cervical (C5-C7) | 01 | 3.33 |
| 03 | Upper Thoracic (T1-T4) | 06 | 20.00 |
| 04 | Mid Thoracic (T5-T8) | 08 | 26.64 |
| 05 | Lower Thoracic (T9-T12) | 09 | 30.00 |
| 06 | Upper Lumber (L1-L3) | 04 | 13.32 |
| 07 | Lumbo-Sacral (L4-S1) | 02 | 6.66 |

**Spinal level with cases.**

| Name of study | No. of patients with TB | Musculoskeletal Involvement | Spinal involvement |
|---|---|---|---|
| UK study 1999-2004 | n-729 | n-61(8%) | 5% |
| US study 2002-2011 | n-75858 | | 3% |
| Present study | n-1000 | | 3% |

# DISCUSSION

In this study 1000 cases tuberculosis out of which 30 cases of spinal tuberculosis were found in all TB patients presenting in our institution during the three year period (2015 – 2017). Most of the cases included in the study belonged to the low and middle Socio-Economic classes of the society. The disease was found to be more common in female, with male to female ratio of 1:1.3. Twenty three patients 73% are less than 40 years of age and the highest incidence of the disease is found in the age group of 11-20 years 37% percent followed by 22-30 years 19.98% and 31-40 years 16.65%. According to this study Carries Spine is the disease of teenagers and young adults. This finding is similar to the studies in endemic countries where spinal tuberculosis is more common in younger children and adults whereas disease is more prevalent in adults in developed world and Middle East.[2,3,4]

The usual symptoms presented in the study are generalized weakness 100%, backache 100%, weight loss 90%, spinal deformity 90%, Anorxia 87%, Paraperesis 70% and Parathesis 70%. Usually, patients seek advice only when there is severe pain, marked deformity, or neurological symptoms[6]. The afternoon fever and night sweats are also not uncommon .The common signs found are local tenderness 100%, spinal movements, restriction and soft tissue thickness about the spines 63%. Kyphosis was the most common spinal deformity seen 85% .The tracking of pus was found only in a few cases 6.66%. The neural deficit was found in majority of the patients 87% and paraperesis was the most common 80% type of neural deficit. The paraplegia 13.32% found was only of spastic type and there were no cases of flaccid paraplegia. The faeco-Urinary incontenance was not a common finding 7%: Majority of the patients 61% with neural deficit presented early within one month duration of disease.

While there were only two patients in whom the duration of neural deficit was upto 4 months. The complete neural recovery did happen in these late presenting cases but it was slow and took upto six months. Concurrent or past history pulmonary tuberculosis is frequent in patients with spinal tuberculosis and the incidence ranges from 50 and 75% in osteoarticular tuberculosis and up to 67% of patients in spinal tuberculosis.[7,8] However the low incidence in our study may be due to small number of patients.This finding correlates with the highest incidence 77% of thoraeicspine. The Spinal level involvement reported by Hodgson, the highest incidence of T12, L1 and L2 Vertebrae. (Hodgson AR: THE spine, Philadelphia, 1975)

The common laboratory finding were raised ESR 93% and anemia 87%. The spinal X.Ray were suggestive in 97% of cases. CT scan and MRI done and suggestive of 100% accuracy.

The material obtained on biopsy was send for culture and sensitivity staining for acid fast bacilli and histopathology in every case. The culture and sensitivity and staining for AFB were negative in all cases and it may be due to anti tuberculosis chemotherapy which the patients were already taking or faulty laboratory techniques. The histopathology reports were suggestive most of the time.

The anti tuberculous chemotherapy initiation with four drug regimen was continued in all cases at least for 3 month.

# CONCLUSION

The anti tuberculosis chemotherapy had to be extended upto one and a half year in three patients because their

ESR values were not decreased to the normal and their radiological healing was not satisfactory.

**Author's Contribution:**

| | |
|---|---|
| Concept & Design of Study: | Naeem Mehmood Mughal |
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| Revisiting Critically: | Naeem Mehmood Mughal, Ashfaq Ahmed |
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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