



Cervical Pott's Spine- Effective Treatment Options

Dr. ROHIN BHATIA

Associate Professor, Department of Neorosurgery, Mahatma Gandhi Medical College, Jaipur, Rajasthan, India

Dr VIJAY BANG

1st year Resident, Department of Orthopaedics, Mahatma Gandhi Medical College, Jaipur, Rajasthan, India

ABSTRACT

Cervical Pott's disease is a rare clinical condition whose diagnosis is usually delayed. We report a series of 3 patients who came to us for cervical pain and diagnosed as cervical pott's and treated by various surgical methods for proper management of individual cases. All three patients improved well and no complications reported by this mode of treatment. So we recommend surgical treatment for the same. Close differential diagnosis of this atypical forms of spinal TB, such as cervical TB is primary or metastatic cancers and lead to delay of treatment initiation that could be fatal. Awareness of this uncommon TB presentation is important to prevent morbidity and mortality associated with delayed and improper treatment.

KEYWORDS

Cervical spine, Tuberculosis, Potts's spine, Cervical pott's

INTRODUCTION

Percival Pott was the first to throw light on spinal tuberculosis (TB) in 1779 (so named 'Pott's Disease')[1,2,3,4]. Untreated natural disease progression leads to serious morbidity, including permanent neurologic deficits and severe deformity[1,2,3,4]. Spinal TB accounts for 2% of all cases of TB, 15% of the cases of extrapulmonary TB and 50% of the cases of skeletal TB[1]. This low prevalence partly accounts for the diagnostic delay of 3 to 12 months after the clinical onset [8]. Spinal TB may be primary (rare) or secondary to TB elsewhere (lungs or abdomen commonly). Lower thoracic and lumbar vertebrae are the most common sites of spinal TB followed by middle thoracic and cervical vertebrae.[7,10,11,12,13,14,15] The second cervical to seventh cervical region is involved in 3-5% of cases and atlantoaxial articulation is less than 1% cases. The propensity of cervical lesions to cause neurologic deficit may explained by the fact that the spinal canal in this region is small relative to the diameter of the cervical cord. In TB, involvement of posterior elements due to TB is not so uncommon. The lamina is most commonly involved followed by pedicles, articular processes, spinous processes, and transverse processes[4,5,6,7,11,12,16].

CASE REPORT

Case 1: A 29 year old male came with pain in neck for 4months with progressing weakness in all four limbs for 1.5months. He had power of 3/5 in all the limbs and movements of neck were restricted. His blood routine were unremarkable and MRI Cervical Spine suggested osteitis at C6 and C7 vertebral bodies and discitis at C6-C7. He underwent C7 carpectomy with evacuation of pus and granulation tissue with fixation with cage and plate screw. Biopsy confirmed pott's spine and antituberculat treatment(ATT) started. His power returned to normal 5/5 post surgery and is living a normal life with regular follow up.



Figure 1. power post operation of case1



Figure 2 surgery done from anterior for case1 compared to posterior in other two cases

Case 2: A 52 year old female came with pain in neck region with radiation to right upper limb. She had bilateral trapezius spasm, neck movements restricted, bilateral weak grip and bilateral biceps jerks were sluggish. Routine blood tests were normal and MRI cervical spine suggested Pott's spine(C4-C6 vertebra end plate erosion, reduced height in C5-C6 vertebra, associated with hyperintense signals in intervening disc)and anterior epidural abscessC5C6. She underwent C5-C6 carpectomy and removal of pus and fixation with a cage and cervical plate on10/02/2016. Biopsy confirmed the diagnosis.ATT was started. She improved well after the intervention and is complication free till date.



Case 3: A 20 year old male patient came with history of neck pain radiating to both the upper limbs for 4months. His grip power was 1/5 on left half and 3/5 on right half, reflexed sluggish. Clinical diagnosis of Cervical Pott's close differential diagnosis lymphoma was made. MRI showed extradural compression at C6C7T1 region. He underwent Laminectomy C6C7T1 and biopsy of bony tissue of vertebra turned out to be tubercular. Hence, diagnosis of Pott's spine was made and ATT started. He responded remarkably well and now he has power 4/5 on left and 5/5 on right.

DISCUSSION

Spinal involvement is usually a result of hematogenous spread of Mycobacterium tuberculosis into the vertebral bodies. The primary infection site is either a pulmonary focus or others (viscera etc.) [17,18]. Spread occurs either via the arterial or venous route(paradiscal type).

In the central lesion, infection starts in the center of the body and spreads along with Batson's venous plexus. Paraplegia is the most devastating complication of spinal TB.

CLINICAL PRESENTATION :

Constitutional symptoms such as weakness, loss of appetite, loss of weight, evening rise of temperature, and night sweats generally occur before the symptoms related to the spine manifest[24]. Clinical findings included back pain, paraparesis,

kyphosis, sensory disturbance, and bowel and bladder dysfunction[24]. Back pain is the earliest and most common symptom in Pott's spine. As the infection progresses, pain increases and paraspinal muscle spasm occurs. Muscle spasm obliterates the normal spinal curves and all spinal movements become restricted and painful.

Physical examination of the spine reveals localized tenderness, soft tissue swelling, paravertebral muscle spasm, kyphotic or scoliotic deformities due to collapse and anterior wedging of vertebral bodies, varying degrees of weakness, nerve root compression, and sensory involvement. Involvement of upper cervical spine though less common, can cause dangerous and rapidly progressive symptoms[6,7,11,16,25,26,27].

DIAGNOSIS :

Diagnosis of spinal TB is made on the basis of typical clinical presentation, skin test and hematological investigations like complete blood count (CBC), erythrocyte sedimentation rate (ESR), Mantoux test, enzyme-linked immunosorbent assay (ELISA), and polymerase chain reaction (PCR)[28]. Bone tissue or abscess stained for acid-fast bacilli (AFB) and isolate organisms for culture, antibiotic sensitivity, and histopathology; the method widely used is CT guided or ultrasonography (USG) guided needle biopsy and/or aspiration or surgical biopsy[6,7]. Plain X-radiograph may show narrowing of the disc space, loss of paraspinal space, kyphotic deformity, and soft tissue shadow[9]. CT scan of the cervical spine will show clearly lysis and destruction of the vertebral body. It may also reveal paraspinal granular tissue[19]. MRI is the most sensitive tool MRI is useful in evaluating the presence and extent of compression of neural structures by the adjacent bone and soft tissues.

TREATMENT :

Combined surgical and medical mode of treatment gives the best results. Surgical intervention is optional.

DIFFERENTIAL DIAGNOSIS :

Differential diagnoses are pyogenic & fungal infections, primary bone tumors (osteosarcoma, chondrosarcoma, and myeloma), Sarcoidosis & giant cell tumors of bone [20]. A close differential. Diagnosis is the secondaries of the spine but in that case the disc spaces are well preserved [21]. Moreover diseases like secondary metastasis and multiple myeloma more commonly involve the dorsolumbar spines. Cervical spine involvement is also seen in rheumatoid arthritis but other criteria should also be fulfilled.

CONCLUSION

We recommend surgical intervention in the cervical pott's spine to prevent devastating complications in view of the excellent progress our patients has made.

REFERENCES

1. Chauhan A, Gupta BB. Spinal tuberculosis. *Indian Acad Clin Med.* 2007;8:110-4.
2. World Health Organisation. The global tuberculosis control. November. 2010
3. Padyana M, Bhat RV, Dinesha M, Nawaz A. HIV-Tuberculosis: A Study of Chest X-Ray Patterns in Relation to CD4 Count. *N Am J Med Sci.* 2012;4:221-5. [PubMed]
4. Moore SL, Rafi M. Imaging of musculoskeletal and spinal tuberculosis. *Radiol Clin North Am.* 2001;39:329-42. [PubMed]
5. Jain R, Sawhney S, Berry M. Computed tomography of vertebral tuberculosis: Pattern of bone destruction. *Clin Radiol.* 1993;47:196-9. [PubMed]
6. Watts HG, Lifeso RM. Tuberculosis of bones and joints. *J Bone Joint Surg Am.* 1996;78:288-98. [PubMed]
7. Dass B, Puet TA, Watanakunakorn C. Tuberculosis of the spine (Pott's disease) presenting as 'compression fractures' *Spinal Cord.* 2002;40:604-8. [PubMed]
8. Hsu LC, Leong JC. Tuberculosis of the lower cervical spine (C2 to C7). A report on 40 cases. *J Bone Joint Surg Br* 1984; 66(1): 1-5.
9. Hoffman EB, Grosier JH, Cremin BJ. Imaging in children with spinal tuberculosis: A comparison of radiography, computed tomography, and magnetic resonance imaging. *J Bone Joint Surg* 1993;75:233-9.
10. Liu GC, Chou MS, Tsai TC, Lin SY, Shen YS. MR evaluation of tuberculous spondylitis. *Acta Radiol.* 1993;34:554-8. [PubMed]
11. Narlawar RS, Shah JR, Pimple MK, Patkar DP, Patankar T, Castillo M. Isolated tuberculosis of posterior elements of spine: Magnetic resonance imaging findings in 33 patients. *Spine (Phila Pa 1976)* 2002;27:275-81. [PubMed]
12. Yusof MI, Hassan E, Rahmat N, Yunus R. Spinal tuberculosis: The association between pedicle involvement and anterior column damage and kyphotic deformity. *Spine (Phila Pa 1976)* 2009;34:713-7. [PubMed]
13. Zaidi H, Akram MH, Wala MS. Frequency and magnetic resonance imaging patterns of tuberculous spondylitis lesions in adults. *J Coll Physicians Surg Pak.* 2010;20:303-6. [PubMed]
14. Mohammadreza E, Fariborz S, Gholamreza B. Pott's Disease: A review of 58 cases. *Med J Islamic Republic Iran.* 2010;23:200-6.
15. Maulin MS, Subir NJ, Tuli SM. Musculoskeletal tuberculosis in children Surgery in Africa. *Monthly review.* 2011
16. Omari B, Robertson JM, Nelson RJ, Chiu LC. Pott's disease. A resurgent challenge to the thoracic surgeon. *Chest.* 1989;95:145-150. [PubMed]
17. Boachie-Adjei O, Squillante RG. Tuberculosis of the spine. *Orthop Clin North*

- Am. 1996;27:95–103. [PubMed]
18. Schirmer P, Renault CA, Holodniy M. Is spinal tuberculosis contagious? *Int J Infect Dis.* 2010;14:e659–66. [PubMed]
 19. Jain AK, Kumar S, Tuli SM. Tuberculosis of spine (C1 to D4). *Spinal Cord* 1999;37:362-9.[PUBMED]
 20. Hodgson AR, Yau A, Kwon JS et al; A clinical study of 100 consecutive cases of Pott's Paraplegia; *Clin. Orthop. Relat Res* 36;128;1964
 21. Maheswari J. *Essential Orthopaedics*; 3 rd edition(revised); New Delhi; Mehta Publishers 2005; 169-180.
 22. R. Cranio-vertebral junction tuberculosis. *Indian J Neurosurg.* 2012;1:61–5.
 23. Alli OA, Ogbolu OD, Alaka OO. Direct molecular detection of Mycobacterium tuberculosis complex from clinical samples-An adjunct to cultural method of laboratory diagnosis of tuberculosis. *N Am J Med Sci.* 2011;3:281–8.[PubMed]
 24. Nussbaum ES, Rockswold GL, Bergman TA, Erickson DL, Seljeskog EL. Spinal tuberculosis: A diagnostic and management challenge. *J Neurosurg.* 1995;83:243–7.[PubMed]
 25. Smith AS, Weinstein MA, Mizushima A, Coughlin B, Hayden SP, Lakin MM, et al. MR imaging characteristics of tuberculous spondylitis vs vertebral osteomyelitis.*AJR Am J Roentgenol.* 1989;153:399–405. [PubMed]
 26. Bell GR, Stearns KL, Bonutti PM, Boumphrey FR. MRI diagnosis of tuberculous vertebral osteomyelitis. *Spine (Phila Pa 1976)* 1990;15:462–5. [PubMed]