Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/jcot

Case Report

Pediatric cervical disc calcification simulating tubercular spondylitis – A case report

Sudhir Kumar Mahapatra MS Ortho, DNB Ortho^{a,*}, Alok Sud MS Ortho, FICS^b,
Anil Mehtani MS Ortho^c

^a Senior Resident, Department of Orthopedics, Lady Hardinge Medical College, Saheed Bhagat Singh Marg, Opposite Shivaji Stadium, New Delhi 110001, India

^b Professor, Department of Orthopedics, Lady Hardinge Medical College, Saheed Bhagat Singh Marg, Opposite Shivaji Stadium, New Delhi 110001, India

^c Professor and Head of the Department, Department of Orthopedics, Lady Hardinge Medical College, Saheed Bhagat Singh Marg, Opposite Shivaji Stadium, New Delhi 110001, India

ARTICLE INFO

Article history:

Received 10 December 2012

Accepted 13 February 2013

Available online 4 March 2013

Keywords:

Cervical disc calcification

Pediatric

Tubercular spondylitis

ABSTRACT

Calcification of intervertebral disc in children is rare. It mostly affect lower cervical region and present with acute neck pain, torticollis, restriction of range of motion. Neurological deficit or dysphagia are rare features. The presence of fever, leukocytosis and elevated erythrocyte sedimentation rate, gives impression of tuberculosis or other infections. This differentiation is important as the management of pediatric disc calcification is mostly conservative and prognosis is good.

Copyright © 2013, Delhi Orthopaedic Association. All rights reserved.

1. Introduction

Acute painful stiff neck in children are mostly due to muscle spasm resulting from poor posture, cervical trauma, muscle sprain or strain, lymphadenitis, local abscess, upper respiratory tract infection, retropharyngeal or parapharyngeal abscess or meningitis.¹ Intervertebral disc calcification (IDC) is a rare cause of acute neck pain in children. It may be associated with preceding history of trauma, fever or rarely radiculitis and neurological features.^{2–5} As all these features are common in tubercular spondylitis and TB is more prevalent in developing countries like India, so the diagnosis may be missed.⁶ In this case report we present a case of calcification

of intervertebral disc in 8-year-old boy, where our initial impression was tubercular spondylitis.

2. Case report

An eight-year-old boy presented to the emergency with pain in the neck and progressive stiffness for four days. There was preceding history of injury to neck while playing one day prior to onset and low grade fever for one day. He was under treatment for pulmonary TB and had completed 22 weeks of chemotherapy. On examination the neck was stiff in extension and attempts of movement were extremely painful.

* Corresponding author. Phasi, Ganjam, Odisha 761038, India. Tel.: +91 9953086068.

E-mail addresses: sudhirortho2007@yahoo.co.in, dr.sudhir.2k@gmail.com (S.K. Mahapatra).

0976-5662/\$ – see front matter Copyright © 2013, Delhi Orthopaedic Association. All rights reserved.

<http://dx.doi.org/10.1016/j.jcot.2013.02.002>

Fig. 1 – X-ray with increased cervical lordosis and haziness of C3-4.

There was no radiation of the pain or neurological deficit. We proceeded with tubercular spondylitis as first clinical diagnosis.

Laboratory examinations were within normal range. X-ray of cervical spine showed no vertebral destruction and normal prevertebral shadow (Fig. 1). However the C3-4 disc space was hazy. CT scan revealed increased circumscribed density in C3-4 space consistent with calcification (Fig. 2). MRI showed decreased signal intensity in the disc space in both T₁ and T₂ images. The C4 superior end plate was edematous and there was thecal indentation (Fig. 3). With these findings the diagnosis of cervical intervertebral disc was made. Conservative management was started with traction & analgesics. By 12 days the pain and spasm gradually reduced, and the child was ambulatory by two weeks.

3. Discussion

Calcification of intervertebral disc is a rare cause of pediatric spinal pain.⁷ Though the real incidence is not known, the frequency is higher in 6–10 years of age, with male predominance. Single level involvement of the nucleus pulposus is the commonest pattern. Lower cervical spine is affected in vast majority of cases.^{2–4} However in the present case the C3-4 level is affected, which is rare.

Fig. 2 – CT showing circumscribed density consistent with calcification in the posterior portion of C3-4 space.

The etiology of IDC remains unclear.^{2,3} About 30% cases have preceding history of trauma, but its absence in majority and presence of IDC even in newborn makes trauma unlikely a cause.⁴ Smith et al demonstrated an inflammatory response with severe reactive fibroblastic proliferation associated with multinucleated foreign body giant cells and pleomorphic histiocytes in the disc material.⁸ Oga et al also found proliferation of histiocytic cells and foreign body giant cells indicating an inflammatory response to the calcification.⁹ But further studies did not found any signs of inflammation, malignancy or neovascularization.^{10,11} This is also supported by the fact that, the picture of IDC is completely different than that of discitis.⁴ Sonnabend et al has proposed that the symptoms in IDC are due to hydrophilic property of the calcific material resulting a raise in pressure within the disc and causing pain analogous to that of supraspianus tendinitis.³ The most plausible explanation is that, these calcific discs have large blood supply and more active metabolism which increases during inflammation. It also explains the sudden appearance, disappearance or enlargement of pediatric IDC.¹²

Single most clinical feature of IDC is acute cervical pain, affecting 80–90% cases. Other common features are radicular pain, tenderness, perivertebral muscle spasm, torticollis, and restriction of range of motion.^{2–4} Severe compression of nerve roots, spinal cord or esophagus by a ruptured IDC is very rare.^{5,13} Presence of low-grade fever, leukocytosis or increased erythrocyte sedimentation rate may raise the suspicion of tuberculosis or other infection. In the present case the patient

Fig. 3 – MRI cervical spine. The C3-4 disc space has decreased intensity in T2 weighted image. There vertebral bodies appear normal. There is mild thecal indentation, but the posterior longitudinal ligament and cord appears to be normal.

was under treatment for pulmonary TB. Due to higher prevalence of TB in India and past history of TB our initial clinical impression was tubercular spondylitis. However as the X-ray was inconclusive, we advised CT and MRI, which revealed the diagnosis.

Most pediatric cervical disc calcification respond to conservative management with analgesics, anti-inflammatory, muscle relaxant, cervical collar and traction.^{3,4} But there is controversy in management of cases with neurological deficit. Where the past authors suggest a conservative management, the recent ones are more in favor of surgical decompression.^{2,5,8–11,13} The prognosis of IDC good and even spontaneous resolution may occur in most cases.^{3,4,14}

To conclude we suggest that IDC though rare, is an important differential diagnosis of pediatric cervical pain as

the prognosis is good with a simple management. What we need is only a high degree of suspicion.

Conflicts of interest

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

REFERENCES

- Disorders of the neck. In: Herring J, ed. *Tachdjian's Pediatric Orthopaedics*. 4th ed. Philadelphia: Saunders; 2008:213–264.
- Yang HS, Chen DY, Yuan W, Yang LL, Tsai N, Lin QS. Paresis associated with aconuresis caused by intervertebral disc calcification at c7-t1: a case report and review of the literature. *Spine*. 2010;35(10):E434–E439.
- Sonnabend DH, Taylor TK, Chapman GK. Intervertebral disc calcification syndromes in children. *J Bone Joint Surg Br*. 1982;64(1):25–31.
- Dai L-Y, Ye H, Qian Q-R. The natural history of cervical disc calcification in children. *J Bone Joint Surg Am*. 2004;86:1467–1472.
- Park SM, Kim ES, Sung DH. Cervical radiculopathy caused by neural foraminal migration of a herniated calcified intervertebral disk in childhood: a case report. *Arch Phys Med Rehabil*. 2005;86:2214–2217.
- Ahmed AM, Dasgupta B, Jagiasi J. Intervertebral disc calcification in child. *Indian J Orthop*. 2008;42(4):480–481.
- Barrett OM, Anderson JT, Rao B, Vaslow D, Hoernschemeyer DG. Multilevel pediatric cervicothoracic intervertebral disc calcifications. *Am J Orthop*. 2008;37(7):E126–E128.
- Smith RA, Vohman MD, Dimon HJ, Averett JE, Milsap HH. Calcified cervical intervertebral discs in children: report of three cases. *J Neurosurg*. 1977;46(2):233–238.
- Oga M, Terada K, Kikuchi N, Oda Y, Sugioka Y. Herniation of calcified cervical intervertebral disc causes dissociated motor loss in a child. *Spine*. 1993;18:2347–2350.
- Swick HM. Calcification of intervertebral discs in childhood. *J Pediatr*. 1975;86:364–369.
- Gerlach R, Zimmermann M, Kellermann S, Lietz R, Raabe A, Seifert V. Intervertebral disc calcification in childhood – a case report and review of the literature. *Acta Neurochir (Wien)*. 2001;143(1):89–93.
- Swischuk LE, Jubang M, Jadhav SP. Calcific discitis in children: vertebral body involvement (possible insight into etiology). *Emerg Radiol*. 2008;15:427–430.
- Coventry MB. Calcification in a cervical disc with anterior protrusion and dysphagia: a case report. *J Bone Joint Surg Am*. 1970;52:1463–1466.
- Rechtman AM, Hermel MB, Albert SM, Boreadis AG. Calcification of intervertebral disk: disappearing, dormant and silent. *Clin Orthop*. 1956;7:218–231.