Transient Osteoporosis of the Hip During Pregnancy

NR Singh, WJ Singh, K Wangjam

Regional Institute of Medical Sciences, Imphal

Introduction

Transient Osteoporosis is a well organised form of regional osteoporosis, though rare. It affects the activities of daily living by its extended course of the disease and disproportionate pain of the affected joint, even though it resolves spontaneously with a benign course. If not recognised, the presentation can be alarming both clinically and radiologically[1]. Curtis and Kincaid[2] introduced the term "transient demineralisation of the hip" referring to a rapidly developing, painful local osteoporosis of limited nature but of unexplained patho-physiology. Later on, Lequesne[3] coined the term, transient osteoporosis of the hip in 1968.

Transient osteoporosis can occur at any age, and in either sex, but most commonly occurs in women during the third trimester of pregnancy and in middle-aged men[1]. Hip is the most commonly affected joint, though migratory pattern may affect the contra-lateral hip joint or the ankle and foot joints. Higher incidence of transient osteoporosis has been reported in patients with osteogenesis imperfect. Here, we report a case of transient osteoporosis affecting the hip joint during the third trimester of pregnancy.

Case Report

A 37 year old female reported to our OPD with complaints of pain both hip joints (right side > left side) in September 2009. She was walked with a limp /antalgic gait brought to the clinic supported by the attendants. She had given birth to a healthy female baby about two and half months back by lower segment caeserian section, which was uneventful. On further enquiry, she reported noticing the pain at her hip joint during the last trimester of pregnancy, insidious in nature with no history of trauma or fever. Pain was aggravated by movement and weight bearing and increased in intensity during the last one month.

When observed, she was walking with support and she could not bear full weight on her right lower limb due to pain in right hip. On examination, range of motion of the right hip was reduced (Flexion 60^0, abduction / adduction 30^0 each and external and internal rotation 15^0each) and hip was tender. Left hip was clinically normal. Power of the muscles around the hip was good. Lumbo-sacral spine was clinically normal.

Investigation reports showed: Hb 12.0 gms%, TLC 5400/ cu.mm, ESR 42 mm/1^{st} hr, serum calcium 11.0 mg%, serum phosphorous – 3.5 mg%, Serum Alkaline phosphatase 165 IU/L (49 IU/L for bone specific fraction), Mycodot for Koch's antibody for IgG and IgM were both negative). MRI of the hip showed discrete reduced signal intensity changes on T1-weighted image and high signal intensity changes in the femoral head, neck and acetabulum on the right side, on STIR sequence film.

She was managed conservatively with protected weight bearing, analgesics. Active assistive ROM exercise of the hip was also advised within the limits of pain. Intravenous bis-phosphonate (3 mg Ibandronic acid) was given along with oral Calcium supplementation.

Discussion

Transient osteoporosis is an uncommon cause of hip pain which is characterised by self limiting transitory clinical nature, osteopenia on radiograph and bone marrow edema on MRI[4]. Transient osteopororsis typically affects women, exclusively during the third trimester of pregnancy and middle-aged men. There were no known predisposing factors except pregnancy in this case. However, the risk of acquiring transient osteoporosis is reported much higher in patients with osteogenesis imperfecta than in general population. Probably, a pathological micro-fracture in such patients might have been the triggering factor for transient osteoporosis [5].

Authors and their affiliations

Dr N Romi Singh, MBBS, DNB (PMR), Associate Professor, Department of Physical Medicine and Rehabilitation (PMR), Regional Institute of Medical Sciences (RIMS), Imphal

Dr W Jatishwor Singh, MBBS, MD (Radio-diagnosis), Associate Professor and Head, Department of Radiodiagnosis, RIMS, Imphal

Prof Kunjabasi Wangjam, MS (Ortho), DNB (PMR). Head of Department, Department of PMR, RIMS, Imphal

Bibliography

Singh NR, Singh WJ, Wangjam K. Transient Osteoporosis of the Hip During Pregnancy. IJPMR 2010; 21 (1): 28-30.

Article received: January 18, 2010

Correspondence

Dr N Romi Singh
Associate Professor
Department of Physical Medicine and Rehabilitation
Regional Institute of Medical Sciences
Imphal 795004

Email: dr.romi.singh@gmail.com

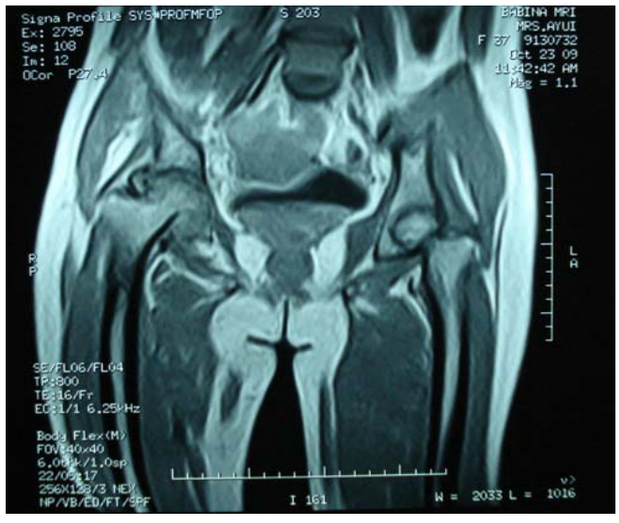

Fig 1. Showing T1 weighted image of the hip joint; right femoral head shows discrete reduced signal intensity changes hip while left hip joint and femoral head shows normal signal intensity.

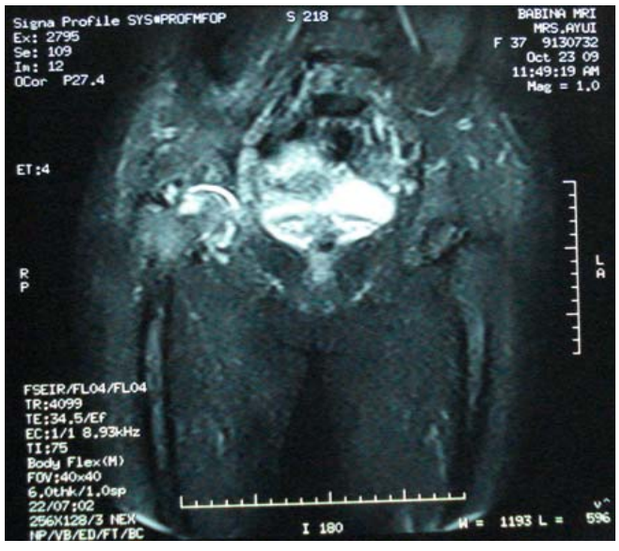

Fig 2. STIR sequence showing increased signal intensity of the femoral head and neck with signs of mild effusion around hip joint.

It has been suggested that transient osteoporosis is a form of non-traumatic variety of reflex sympathetic dystrophy, because of the diffuse variety of involvement around the affected joints and migratory involvement of other joints[3,6]. However, the absence of classical signs that are pathognomonic of sympathetic reflex dystrophy did not support the patho-physiologic mechanism of transient osteoporosis.

Symptoms and radiological changes of transient osteoporosis usually lasts an average of 8-12 months. Its typical clinical presentation has three phases[1]. The first phase (rapid aggravation phase) lasts one to two months with acute onset of pain and increasing functional disability. The second phase (maximal intensity) lasts another two to three months with signs and symptoms reaching a plateau. Radiographs show diffuse osteopenia without loss of joint space. There is no evidence of sub-chondral fracture, dense sclerosis or degenerative changes which are the hall-mark of osteonecrosis. The third phase (regression phase) lasts another four to six months. Radiographs show reconstitution of normal bone density while the symptoms subside to complete clinical resolution.

The diagnosis of transient osteoporosis is usually made by exclusion. The differential diagnosis includes septic arthritis, osteonecrosis and malignant infiltration[7]. Differentiation between transient osteoporosis and osteonecrosis may be difficult at early phase, but MRI has been shown to sensitive to differentiate between the two at an early stage. Lesions of osteonecrosis show focal lesions typically in antero-lateral aspect of femoral head, demonstrating decreased signal intensity on both T1 and T2 –weighted images on MRI whereas MRI finding of transient osteoporosis is characterised by diffuse bone marrow oedema in upper femur and acetabulum, with ill-defined intensity in T-1 weighted image with a matching area of increase intensity in on T-2 weighted images[8].

Treatment of transient osteoporosis is directed towards protected weight relief and analgesics for pain control [9,10] and active and passive range of motion exercises as tolerated is prescribed to prevent contractures and deformities when the course of illness is prolonged[9]. Use of second- and third-generation bisphosphonates has been the recent medical strategy for management of transient osteoporosis[11].

We have presented the case because of its rarity and uncertainty of the underlying etiology, as well. Transient osteoporosis may be confused with a variety of conditions and perhaps, with avascular necrosis as the most common misdiagnosis. Conservative management will suffice, but with due assurance and patience, as the course is a benign and self limiting one and also to avoid sinister complications like fractures and collapse of the femoral head during the initial phases as outlined above. Transient osteoporosis in pregnancy deserves special attention as traumatic fractures of the femoral neck and stress fractures have been reported in pregnant women.

References

1. Schapira D. Transient osteoporosis of the hip. Semin Arthritis Rheum 1992;22:98-105.
2. Curtiss PH, Kincaid WE. Transient demineralization of the hip in pregnancy: a report of three cases. J Bone Joint Surg 1959; 41(A): 1327-33.

3. Lequesne M. Transient osteoporosis of the hip. A nontraumatic variety of Sudeck's atrophy. Ann Rheum Dis 1968;27:463-71.
4. Plenk H, Hofmann S, Eschberger J, et al. Histomorphology and bone morphometry of the bone marrow edema syndrome of the hip. Clin Orthop 1997; 334: 73-84.
5. Karagkevrekis CB, Ainscow DAP. Transient osteoporosis of the hip with osteogenesis imperfecta. J Bone Joint Surg 1998; 80(B): 54-5.
6. Lequesne M, Kerboull M, Benasasson M, Perez C, Dreiser R, Forest A. Partial transient osteoporosis. Skeletal Radiol 1977; 2: 1-9.
7. Hayes CW, Conway WF, Daniel WW. mR imaging of bone marrow edema pattern: transient osteoporosis, transient bone marrow edema syndrome, or osteonecrosis. Radiographics 1993; 13: 1001-11.
8. Grimm J, Higer HP, Benning R, Meairs S. MRI of transient osteoporosis of the hip. Arch Orthop Trauma Surg 1991; 110: 98-102.
9. Bramlett KW, Killian JT, Nasca RJ. Transient osteoporosis. Clin Orthop. 1987; 222: 197-200.
10. Guerra JJ, Steinberg ME. Distinguishing transient osteoporosis from avascular necrosis of the hip. J Bone Joint Surg 1995; 7(A): 616-24.
11. Kabi F, Mkinsi O, Zriqui J. Pregnancy-associated Osteoporosis: A new case. Rev Med Interne 2006; 27 (7): 558-60.

IAPMR Mid Term CME, 2010

Organized by: Maharashtra Chapter of IAPMR
and
All India Institute of Physical Medicine and Rehabilitation, Mumbai
August 20-21, 2010

Organizing Committee:

Patron: Dr B D Athani

Chairman: Dr T Sreedhar

Organizing Secretary: Dr Anil Gaur

Co-organizing Secretaries:

Dr Abhishek Srivastava and Dr Sindhu V

For further details including program, fees and forms please visit:

www.iapmr.com

Address for Correspondence:

Dr Anil Gaur
Organising Secretary, IAPMR CME Programme
All India Institute of Physical Medicine and Rehabilitation
K Khadye Marg
Haji Ali, Mahalaxmi
Mumbai – 400034

Phone (office): 022-23544341, 022- 23540933

Email: dranilgdranil@yahoo.co.in

Outline of Topics to be covered

Osteoarthritis and intra-articular injections

Recent advances in osteoporosis management

Use of Botulinum Toxin in neuropathic bladder management

Recent advances in Neuropathic pain management

Cardio-pulmonary rehabilitation

Diabetic foot management

Gait analysis - live demo

Analysing EMG tracings

Milestone development and therapeutic interventions in CP

Spasticity Management in cerebral Palsy

Assessment of a case of CP for Upper extremity surgical interventions

Assessment of a case of CP for lower extremity surgical interventions