

Utility of bone scintigraphy in diagnosis of post-traumatic osteitis pubis

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ABSTRACT

Minor musculoskeletal injuries usually heal within few weeks with conservative treatment, but in pelvic injuries, symptoms may persist for long duration and patient need medical attention to get relief from disturbing pain symptoms. We present a case of post-trauma osteitis pubis in a 58-year-old female, who reported with lower abdominal and left side hip joint pain since 2 months, after an episode of trivial trauma to her pelvis. Technetium-99m methylene diphosphonate bone scintigraphy was performed, which confirmed the site of injury in symphysis pubis and left hip joint, by increased radiotracer localization at both of these symptomatic sites.

Keywords: Bone scintigraphy, osteitis pubis, pelvic trauma

INTRODUCTION

Osteitis pubis has been originally described in patients following suprapubic surgery for genitourinary pathologies and remains a well-known complication of invasive procedures of the pelvic area.^[1] Although it represents a common cause of pain in athletes, it has been reported after trauma, pregnancy and parturition.^[2-4] It can affect all age groups, however, it is rarely encountered in the pediatric population. It occurs most commonly in men aged between 30 years and 50 years, women are affected more during third decade of life.^[5] Post-traumatic osteitis pubis may occur in any age, but it is rare in elderly people. We present a case of post-minor trauma, osteitis pubis in an elderly female, who reported with unusual lower abdominal and left hip pain.

CASE REPORT

A 58-year-old, post-menopausal, nulliparous woman, presented with severe pain in anterior lower part of abdomen and left hip region, since 2 months, pain was insidious in onset and started, soon after a minor stretch injury to pelvis while getting down from a bus. There was no history of acute or chronic illness,

fever, abdominal surgery, endoscopic procedure, or arthritic disease. Clinical examination revealed localized pain in inguinal, suprapubic and left hip region, aggravating with walking. Her insidious onset of pain at these sites raised high suspicion of soft tissue, ligament or avulsion injury in pelvis. She was evaluated with routine hematological investigations and X-ray pelvis, they were normal and ruled out bone fracture or a lesion in symphysis pubis causing pain. To evaluate further, she was referred for technetium-99m methylene diphosphonate bone scintigraphy. Her bone scintigraphy, anterior and posterior planar image of pelvis revealed intense radiotracer uptake in symphysis pubis region. In addition to this, area of mild diffuse increase tracer uptake with focal intense lesion was localized in lower part of left sacroiliac (SI) joint [Figure 1]. She was also evaluated with bone single photon emission computerized tomography (SPECT) of pelvis. SPECT, reconstructed transverse and coronal images showed intense uptake in symphysis pubis, mild diffuse increased tracer uptake with focal intense lesion in left SI joint, lower part [Figure 2]. Both planar and SPECT findings were correlated with the site of trauma and suggestive of reactive and reparative changes in symphysis pubis and left SI joint. We also correlated these findings with CT scan using software based fusion of SPECT and CT images which showed no structural abnormality in symphysis pubis and documented early sclerotic changes in lower part of left SI joint, suggestive of post-trauma, arthritic changes [Figure 3]. Patient was reassured and managed conservatively with bed rest and non-steroidal anti-inflammatory drugs, which relieved her symptoms.

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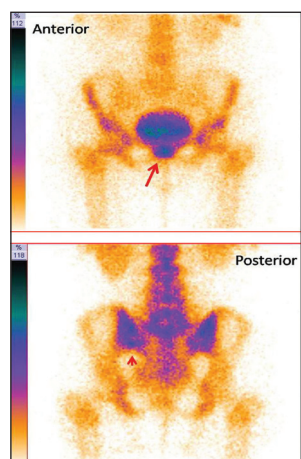


Figure 1: Technetium-99m methylene diphosphonate bone scintigraphy, arrow in pelvis anterior and posterior planar images shows intense tracer uptake in symphysis pubis and mild increased uptake in left sacroiliac joint

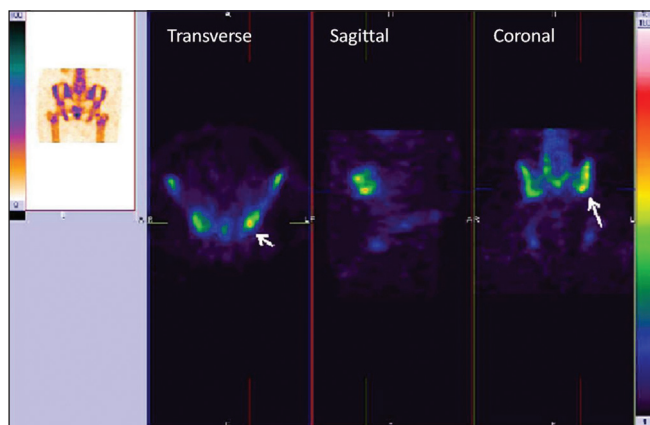


Figure 2: Bone single photon emission computerized tomography of pelvic, transverse and coronal images shows mild diffuse increased uptake in left sacroiliac joint, arrow shows intense uptake site in joint

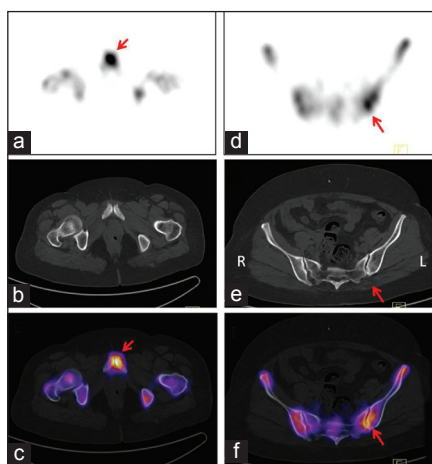


Figure 3: Transverse image, bone single photon emission computerized tomography (SPECT) (a), CT scan (b), and SPECT/CT scan (software based fusion) image (c), arrow shows intense tracer uptake in symphysis pubis with no structural abnormality, transverse image SPECT scan (d), CT scan (e), and SPECT/CT scan (software based fusion) image (f) shows diffuse increased uptake in left sacroiliac joint with mild sclerotic changes in corresponding area

DISCUSSION

Osteitis pubis is a well-known painful non-infectious inflammatory condition that involves the pubic bone, symphysis, surrounding muscle insertions and structures around. It was first described as a complication of suprapubic urinary tract surgeries and later it was documented in patients after gynecological procedures, childbirth and as a result of repeated minor trauma due to adductor muscle pull in athletes.^[1-4] Few reports in literature highlight osteomyelitis and tuberculosis of symphysis pubis.^[6,7] Post-traumatic osteitis pubis is 5 times more prevalent in males involved in sports activities, and its reported incidence is 0.5-7%.^[5]

The pathogenesis of osteitis pubis is not clear, it has been hypothesized that following an initial strain a cycle of event is created which is exacerbated by further activity. Repetitive shear across an already unstable joint leads to mechanical irritation, micro-trauma, inflammation, and ultimately the bony resorption.^[8,9] Pain is the primary symptom and is typically associated with difficulty in ambulation and cause characteristic “waddling gait.” Symptoms may develop from 1 week to 8 weeks after the initiating event. The duration of the signs and symptoms is related to the severity of the inflammation and the response to therapy after the appropriate diagnosis is established.^[10,11]

Osteitis pubis is rare in non-athletic population, but it may also be seen in patients with rheumatoid arthritis, ankylosing spondylitis, and osteoarthritis.^[12] Post-traumatic osteitis pubis may be seen in healthy young or elderly persons after a single or repeated events of minor trauma in day to day life, for example leg stretching on a slippery surface, jumping on hard and uneven surface, stepping up or getting down from an abnormally high platform. These patients are usually undiagnosed as in majority of cases symptoms subside with rest or analgesic, but in some of the patients symptoms persists and disturb their routine activities, warrants them to seek medical attention.^[13] There are different imaging techniques available for evaluation of these patients, X-ray pelvis, bone scintigraphy, CT scan or magnetic resonance imaging scan, to localize the soft tissue, bone or joint injury.^[14]

Bone scintigraphy is a highly sensitive radionuclide based functional imaging modality, useful in localization of bone lesions by documenting increased osteoblastic activity, secondary to infection, trauma or metastatic disease.^[15] In literature few studies highlighted the importance of SPECT/CT fusion imaging for localization of subtle benign or malignant bone lesions.^[16,17] In this case, we used bone scintigraphy, SPECT and software fusion of SPECT and CT images to localize the trivial trauma sites causing pain symptoms in anterior lower part of abdomen and left SI joint. Bone scintigraphic findings, confirmed the presence of traumatic osteitis pubis and early post-trauma related arthritic changes in left SI joint, which further confirmed by SPECT and SPECT CT fusion imaging. These observations highlight the utility of bone scintigraphy

as an important imaging modality, which can detect early changes in bone and joints with high sensitivity, SPECT/CT fusion imaging accurately localizing the lesions and helps in establishing the diagnosis and early treatment to reduce the symptoms of affected patients.

REFERENCES

- Beer E. Periostitis of symphysis and descending rami of pubis following suprapubic operations. *Int J Med Surg* 1924;37:224-5.
- Harris NH, Murray RO. Lesions of the symphysis in athletes. *Br Med J* 1974;4:211-4.
- Koch RA, Jackson DW. Pubic symphysisitis in runners. A report of two cases. *Am J Sports Med* 1981;9:62-3.
- Gonik B, Stringer CA. Postpartum osteitis pubis. *South Med J* 1985;78:213-4.
- Kavrouidakis E, Karampinas PK, Evangelopoulos DS, Vlamis J. Treatment of osteitis pubis in non-athlete female patients. *Open Orthop J* 2011;5:331-4.
- Coventry MB, Mitchell WC. Osteitis pubis: Observations based on a study of 45 patients. *JAMA* 1961;178:898-905.
- Bali K, Kumar V, Patel S, Mootha AK. Tuberculosis of symphysis pubis in a 17 year old male: A rare case presentation and review of literature. *J Orthop Surg Res* 2010;5:63.
- Batt ME, McShane JM, Dillingham MF. Osteitis pubis in collegiate football players. *Med Sci Sports Exerc* 1995;27:629-33.
- Mandelbaum B, Mora SA. Osteitis pubis. *Oper Tech Sports Med* 2005;13:62-7.
- Baki E, Cüneyt T, Ediz A. A rare clinical condition after pelvic surgery: Osteitis pubis. *Anatol J Clin Investig* 2009;3:259-61.
- Lentz SS. Osteitis pubis: A review. *Obstet Gynecol Surv* 1995;50:310-5.
- Scott DL, Eastmond CJ, Wright V. A comparative radiological study of the pubic symphysis in rheumatic disorders. *Ann Rheum Dis* 1979;38:529-34.
- Andrews SK, Carek PJ. Osteitis pubis: A diagnosis for the family physician. *J Am Board Fam Pract* 1998;11:291-5.
- Morelli V, Smith V. Groin injuries in athletes. *Am Fam Physician* 2001;64:1405-14.
- Love C, Din AS, Tomas MB, Kalappambath TP, Palestro CJ. Radionuclide bone imaging: An illustrative review. *Radiographics* 2003;23:341-58.
- Roach PJ, Schembri GP, Ho Shon IA, Bailey EA, Bailey DL. SPECT/CT imaging using a spiral CT scanner for anatomical localization: Impact on diagnostic accuracy and reporter confidence in clinical practice. *Nucl Med Commun* 2006;27:977-87.
- Horger M, Bares R. The role of single-photon emission computed tomography/computed tomography (CT) in benign and malignant bone disease. *Semin Nucl Med* 2006;36:286-94.

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