



Pelvic Insufficiency Fractures in Patients with Rheumatoid Arthritis: A single Case Report

Romatoid Artritli Hastalarda Pelvik Yetmezlik Kırıkları

Emel Ekşioğlu, Yasemin Tombak, Zeynep Şener, Ajda Bal

University of Health Sciences Turkey, Dışkapı Yıldırım Beyazıt Training and Research Hospital, Clinic of Physical Medicine and Rehabilitation, Ankara, Turkey

Abstract

One of the risk factors for pelvic insufficiency fractures is rheumatoid arthritis (RA). Unfortunately, the diagnosis of these fractures is difficult in these patients and their treatment is delayed. When a patient with RA comes a complaint of pain in the groin or lower back without a trauma, it should be considered that this may be an insufficiency fracture, and careful clinical assessment and appropriate imaging methods should be used. Insufficiency fractures are a rare complication of RA. In our case a 70-year old woman with RA presented with acute onset severe left groin pain. Computed tomographic scan of the left hip showed that there is probably an old fracture on the left anterior to the acetabular roof and superior-inferior pubic ramus. Fractures in the patient were treated conservatively. Early diagnosis followed by proper treatment may help improve the quality of life and prevent disability of these patients.

Keywords: Insufficiency fracture, rheumatoid arthritis, quality of life, disability

Öz

Pelvik yetmezlik kırıkları için risk faktörlerinden biri romatoid artrit (RA). Ne yazık ki bu hastalarda bu kırıkların tanısı güç olmakta ve tedavisi gecikmektedir. Bir RA hastası non-travmatik kasık veya bel ağrısı şikayeti ile geldiğinde bunun bir yetmezlik kırığı olabileceği düşünülmeli ve dikkatli klinik değerlendirme ve uygun görüntüleme yöntemleri kullanılmalıdır. Yetmezlik kırıkları RA'nın nadir görülen bir komplikasyonudur. Olgumuzda 70 yaşında RA'lı kadın akut başlangıçlı şiddetli sol kasık ağrısı ile başvurdu. Sol kalçanın bilgisayarlı tomografisi, asetabular çatının ve superior-inferior pubis ramusunun önünde muhtemelen eski bir kırık olduğunu gösterdi. Hastadaki kırıklar konservatif olarak tedavi edildi. Erken teşhis ve ardından uygun tedavi, bu hastaların yaşam kalitesinin iyileştirilmesine ve sakatlıkların önlenmesine yardımcı olabilir.

Anahtar kelimeler: Yetmezlik kırığı, romatoid artrit, yaşam kalitesi, engellilik

Introduction

Insufficiency fractures are a subtype of stress fracture that occurs as a result of normal or physiological stress applied to the bone with reduced resistance. Major risk factors for insufficiency fractures are primary osteoporosis and secondary osteomalacia often in combination with old age and female gender. Other predisposing factors are rheumatoid arthritis (RA) renal failure, diabetes mellitus, hyperparathyroidism, long-term steroid use, previous radiotherapy, Cushing disease, liver cirrhosis, multiple myeloma and Wegener's disease (1-3).

Resulting from their reduced walking capacity, disease-related inflammation, and glucocorticoid use, patients with RA have a higher risk of osteoporosis and fracture than the general

population (4). Recently, chronic inflammation has been recognized as a potential risk factor for osteoporotic fractures (5). In a the Health Aging and Body Composition Study, it was shown that elevated inflammatory markers, such as Interleukin-2, interleukin-6, C-reactive protein (CRP) and tumor necrosis factor- α , were associated with osteoporotic fracture (6). insufficiency fractures in RA patients can occur anywhere in the body, and one of the most common sites is the pelvis.

This case report highlights a 70-year-old patient with RA who presented to the hospital with left groin discomfort and was diagnosed with a pubic ramus and iliac ala fracture. Parasympyseal fractures with iliac ala fractures are uncommon, just as they were in our case (7).

Address for Correspondence/Yazışma Adresi: Yasemin Tombak MD, University of Health Sciences Turkey, Dışkapı Yıldırım Beyazıt Training and Research Hospital, Clinic of Physical Medicine and Rehabilitation, Ankara, Turkey

Phone: +90 312 596 2996 **E-mail:** yasemintombak@hotmail.com **ORCID ID:** orcid.org/0000-0003-0065-5376

Received/Geliş Tarihi: 08.04.2022 **Accepted/Kabul Tarihi:** 03.06.2022

According to earlier reports, most of RA patients experiencing pelvic insufficiency fractures react favorably to conservative treatment. Subject fractures are mostly stable and the pain can be managed with bed rest (7).

Case Report

A female patient at her seventy with known RA (Rheumatoid factor: 187 IU/mL, anti-cyclic citrullinated peptide: 7 IU/mL), primary hypertension and diabetes mellitus complained of left groin pain with sudden onset and gradually becoming more severe. Three months after initial presentation she was admitted to our hospital. She had not been through anything traumatic recently, while she was unable to weight bear. A radiography of the pelvis showed a suspicious fracture line at the level of the left iliac side and pubic ramus (Figure 1). Then patient underwent computerized tomography (CT) imaging of the left hip joint. CT showed displaced and partially fragmented fracture lines, which are thought to be probably belong to the old fracture, in the anterior of the acetabular roof and superior-inferior pubic ramus on the left, and nodular hypodense soft tissue densities with indistinct borders in the intramedullary area (Figure 2a, b).

The patient's erythrocyte sedimentation rate was 39 mm/h and CRP was 11 mg/L.

The renal functions were as the following: alanine transaminase: 18.9 U/L, aspartate transaminase: 27.3 U/L, creatinine: 0.82 mg/dL, ure: 43.5 mg/dL, 25-OH vitamin D: 48 ng/mL, calcium: 9.38 mg/dL, phosphorus: 2.92 U/L, parathormone: 88.9 pg/dL. Patient's bone mineral density T-score was -2.1 in the left femur total, -3.0 in the L1-L4 vertebrae. She has been using prednisolone 5 mg/day for 15 years, leflunomide 20 mg/day and hydroxychloroquine 400 mg/day for 8 years for the treatment of RA.

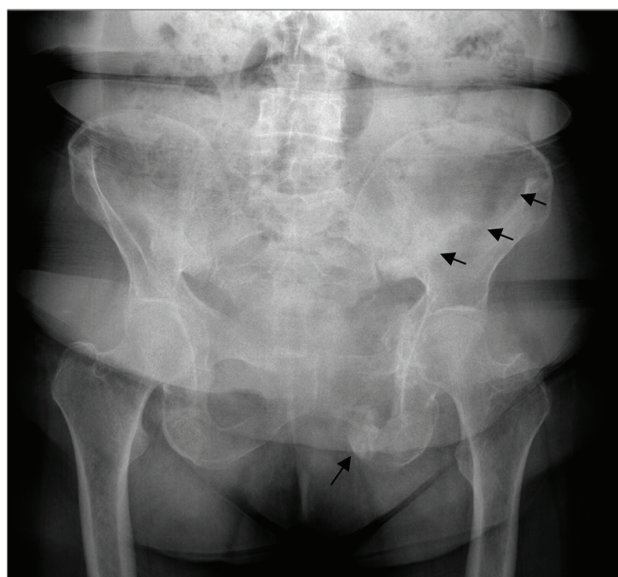


Figure 1. Fracture line at the level of the left iliac side and pubic ramus

On physical examination, the patient did not have swollen and tender joints and had no morning stiffness. [Disease Activity Score 28 (DAS 28): 3.26], Health Assessment Questionnaire (HAQ): 0.1 Short Form 36 (SF-36): 52, her pain with [visual analog scale (VAS), 0-10 mm]: 7]. The patient was ambulatory with a single cane and had a Trendelenburg gait pattern. Left hip range of motion was normal. There is weakness in the lower extremity muscles, especially in the abductor muscles.

Zoledronic acid 5 mg/100 mL was administered intravenously to the patient for the osteoporosis. The patient's physical therapy and rehabilitation program was started. Gait-balance exercises, strengthening exercises for the muscles of the lower extremities (especially hip abductors), cold pack and transcutaneous electrical nerve stimulation (TENS) application on the left posterior pelvis were performed daily. Tramadol 50 mg/day was started for her pain. After 2 weeks later the patient's left hip pain complaint regressed. It was observed that the patient was independently ambulated with minimal Trendelenburg gait at discharge with DAS 28: 2.21, HAQ: 0.05, SF-36: 54%, pain with VAS: 1 at discharge.

Discussion

Pelvic insufficiency fractures, according to the definition, occur when bone fails under normal physiologic load. Hence,

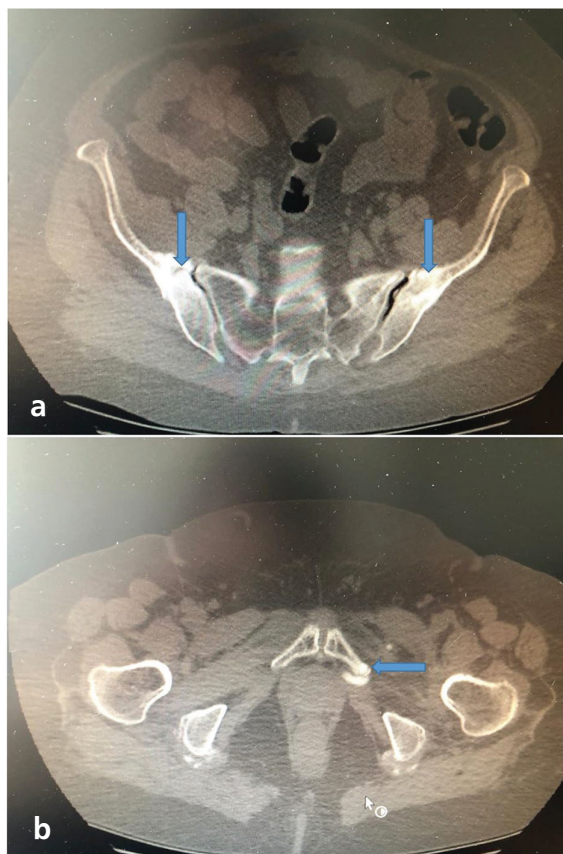


Figure 2a, b. Computerized tomography imaging of the right and left iliac bone fracture and left inferior ramus fracture

any disease that reduces bone density might be a risk factor (8,9). The incidence of insufficiency fractures is believed to be between 1 and 5 percent, depending on the referral population (1,10). Several conditions may consist bone density and strength, predisposing patients to insufficiency fractures and postmenopausal osteoporosis being the most cause among them. Other risk factors are chronic systemic diseases such as RA, long term glucocorticoid use and the use of radiotherapy (1,4). Pelvis insufficiency fractures are becoming more common, and they can cause significant disability in the elderly (8). Previously, pelvic insufficiency fractures and parasymphseal fractures are separately described in RA patients. Less common are parasymphseal fractures with iliac ala fractures (7). These combination fractures are hypothesized to be caused by the pelvic ring structure and the vertical shear stress delivered to this location (11). In our case; the patient has also multiple risk factors such as RA, long term glucocorticoid treatment and postmenopausal osteoporosis. Particularly, in our patient, the pelvic ring was grossly unstable due to a combination of parasymphseal and iliac ala fractures, resulting in an inability to walk. Radiography and CT scan of the pelvis showed displaced and partially fragmented fracture lines in the anterior of the acetabular roof and superior-inferior pubic ramus and at the level of the left iliac side, supporting the diagnosis of pelvic insufficiency fracture.

The majority of pelvic insufficiency fractures are treated conservatively with bed rest and analgesia, followed by gradual mobilisation (9). Our patient's treatments involved physical therapy for example gait-balance exercises, strengthening exercises for the muscles of the lower extremities (especially hip abductors), cold pack and TENS. And for her pain relief we used tramadol 50 mg/day. At the end of 2 weeks, the patient's pain regressed to a great extent and she started walking unaided.

In conclusion, pelvic insufficiency fracture does not appear very often in patients with RA and diagnosis is often delayed. Expanded mindfulness of this condition and determination of suitable radiological examination methods will result in a faster and more precise conclusion and early detection of these fractures followed by appropriate treatment may aid in improving the quality of life and preventing disability.

Ethics

Informed Consent: Was obtained from the patient regarding the case report.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.E., Y.T., Concept: E.E., A.B., Design: E.E., A.B., Data Collection or Processing: Y.T., Z.Ş., Analysis or Interpretation: E.E., Y.T., Z.Ş., A.B., Literature Search: E.E., Y.T., Z.Ş., Writing: E.E., A.B.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Weber M, Hasler P, Gerber H. Insufficiency fractures of the sacrum. Twenty cases and review of the literature. *Spine (Phila Pa 1976)* 1993;18:2507-12.
2. Alnaib M, Waters S, Shanshal Y, Caplan N, Jones S, St Clair Gibson A, et al. Combined pubic rami and sacral osteoporotic fractures: a prospective study. *J Orthop Traumatol* 2012;13:97-103.
3. Gotis-Graham I, McGuigan L, Diamond T, Portek I, Quinn R, Sturgess A, et al. Sacral insufficiency fractures in the elderly. *J Bone Joint Surg Br* 1994;76:882-6.
4. Nampei A, Hashimoto J, Koyanagi J, Ono T, Hashimoto H, Tsumaki N, et al. Characteristics of fracture and related factors in patients with rheumatoid arthritis. *Mod Rheumatol* 2008;18:170-6.
5. McLean RR. Proinflammatory cytokines and osteoporosis. *Curr Osteoporos Rep* 2009;7:134-9.
6. Cauley JA, Danielson ME, Boudreau RM, Forrest KY, Zmuda JM, Pahor M, et al. Inflammatory markers and incident fracture risk in older men and women: the Health Aging and Body Composition Study. *J Bone Miner Res* 2007;22:1088-95.
7. Hoshino Y, Doita M, Yoshikawa M, Hirayama K, Sha N, Kurosaka M. Unstable pelvic insufficiency fracture in a patient with rheumatoid arthritis. *Rheumatol Int* 2004;24:46-9.
8. Soubrier M, Dubost JJ, Boisgard S, Sauvezie B, Gaillard P, Michel JL, et al. Insufficiency fracture. A survey of 60 cases and review of the literature. *Joint Bone Spine* 2003;70:209-18.
9. O'Connor TJ, Cole PA. Pelvic Insufficiency Fractures. *Geriatr Orthop Surg Rehabil* 2014;5:178-90.
10. Fukunishi S, Fukui T, Nishio S, Imamura F, Yoshiya S. Multiple pelvic insufficiency fractures in rheumatoid patients with mutilating changes. *Orthop Rev (Pavia)* 2009;1:e23.
11. Tsiridis E, Upadhyay N, Giannoudis PV. Sacral insufficiency fractures: current concepts of management. *Osteoporos Int* 2006;17:1716-25.