



## Case Report

# Transient Osteoporosis of the Hip: A Case Report

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### Abstract

Transient osteoporosis of the hip, idiopathic, is a table, beginning with hip pain without a history of trauma, usually self-limiting and seen in middle-aged men and pregnant women. In this case report, a male patient who was admitted because of hip pain and detected transient osteoporosis of the hip was discussed. The purpose of the case presentation is to emphasize the necessity of transient osteoporosis of the hip in the differential diagnosis of sudden onset of hip pain and to review the literature on this subject.

**Keywords:** Bone marrow edema; magnetic resonance imaging; pregnancy; transient osteoporosis of the hip.

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Transient osteoporosis of the hip (TOH) is generally an idiopathic disease with a good prognosis and self-limiting. <sup>[1]</sup> TOH is seen in men in the 4<sup>th</sup> or 5<sup>th</sup> decade of life, in pregnant women in the 3<sup>rd</sup> trimester and in the early postpartum period. The most important method for diagnosis after clinical history and examination is magnetic resonance imaging (MRI).<sup>[2, 3]</sup> In this case report, the diagnosis and treatment of TOH will be mentioned over the male case with TOH.

### Case Report

A 43-years-old male patient was admitted to our outpatient clinic with complaints of left hip pain that worsened in the age of about a month and difficulty walking. When the patient's history is examined, we learned that the pain started suddenly, there was no trauma, the pain was especially severe when walking. He was smoking, could not drink alcohol, and had no known illness in his history. There was no medication he used all the time. He received medi-

cal treatment for pain and did not benefit.

In the examination of the patient, it was detected that hip range of motion was open on the right, 20° of the internal rotation on the left, and was open in other directions. In addition, the FABER test on the left was evaluated as positive. It was observed that he avoided giving it to his left leg while walking.

In the laboratory examinations, C-Reactive Protein (CRP) level was 6 mg/L, 25-Hydroxy Vitamin D level was 20.6 ng/mL, hemogram and wide biochemistry tests were within normal limits. There was no obvious pathology in the pelvis anteroposterior radiography. Thereupon, an MRI of the hip was requested as an advanced examination. MRI showed intense medullary edema in the femoral head and neck, lobulation fluid in the left hip joint and a small loose body (Figs. 1, 2). TOH was considered in the foreground in the patient without a history of trauma. Thereupon, bone mineral density (BMD) was measured using Dual-Energy X-Ray Ab-

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**Figure 1.** T1-Turbo inversion recovery magnitude (TIRM) coronal MRI.



**Figure 2.** T1-Turbo spin-echo (TSE) coronal MRI.

sorptiometer (DXA), lumbar 2-4 T-score was -1.3 and femoral neck T-score was -1.7.

Conservative treatment was planned first. Rest was recommended to the patient, the use of a walking aid device was recommended to reduce the load on the femoral head, and exercises were demonstrated. Non-steroidal anti-inflammatory drug (NSAID) treatment was initiated for pain control. The ignition of bisphosphonate therapy was recommended but was not initiated because the patient did not want to use it. Calcium carbonate + cholecalciferol tablet and vitamin D drop treatment were added, and the outpatient clinic was called after one month. Patient's consent was obtained for this study.

## Discussion

TOH is an uncommon hip pain picture that is generally self-limited, seen in middle-aged men and pregnant women, and begins hip pain without a history of trauma.<sup>[4]</sup> TOH was first described in 1959 by Curtiss and Kincaid in pregnant women in the third trimester with unilateral bilateral hip pain. They observed demineralization in the femoral head and the femoral neck in radiological imaging and observed that it resolved spontaneously after a few months.<sup>[5]</sup> In 1988, Wilson et al. named the same clinical picture as 'Transient Tissue Edema Syndrome' and reported that BMD was normal or osteopenic when looking at their BMD with DXA, and they reported that there were hypointense signal changes in T1 sequence and hyperintense signal changes T2 and STIR sequences in MRI.<sup>[6]</sup> In the literature, we see that TOH is named Temporary Bone Edema Syndrome, Transient Mobile Osteoporosis, Regional Transient Osteoporosis has been reported in the knee, ankle, foot, vertebra and shoulder.

TOH is divided into three phases. In the first stage, there is edema in the bone tissue together with acute hip pain, while in the second stage, it is seen that the resorption of the bone tissue increases and demineralization occurs. In the third stage, the disease is observed to regress clinically and radiologically.<sup>[8, 9]</sup> With correct conservative treatment, recovery is seen in an average of six months.<sup>[10]</sup>

Although pregnancy is the most common risk factor reported for TOH, when the literature is reviewed, it has been observed that the incidence is higher in men and the reported median age is 40.<sup>[4]</sup> Rarely, it may occur due to trauma, alcohol consumption, smoking, corticosteroids, hyperthyroidism, hyperphosphatemia, low testosterone and vitamin D levels, vascular pathologies, inflammation, drug use or osteogenesis imperfecta.<sup>[11]</sup>

While there is a decrease in BMD in patients with TOH, its relation with bone edema and micro-fracture is not clear. While an increase in bone turnover markers is detected in the biopsy performed from the lesion area, serum concentration levels do not increase.<sup>[7, 12]</sup>

MRI is the best method to show TOH. MRI may show edema in the bone within the first 48 hours after symptoms begin.<sup>[9]</sup> It allows exclusion of malignancy, osteomyelitis and inflammatory arthritis. T1 sequence is isointense, T2 and STIR sequences hyperintense, homogeneous pattern, diffuse edema with no clear boundaries. Here, stress fracture and vascular necrosis (AVN) should be considered in the differential diagnosis. While there is an irregular line in a stress fracture, deformity, crescent sign, focal and subchondral changes in the femoral head in AVN may facilitate the diagnosis. In addition, risk factors in the etiology

of AVN may also be guiding.<sup>[10]</sup>

Treatment of TOH is primarily conservative. While reducing bone resorption, it recognizes the time required for regeneration. The pain may arise from increased intraosseous pressure, venous hypertension, increased focal bone turnover, micro-fracture and periosteal irritation.<sup>[7]</sup> Conservative treatment consists of minimal weight-bearing, rating, the use of devices, such as walking canes, physical therapy methods, such as hot pack, ultrasound, interferential current, and the use of analgesics.<sup>[10]</sup> We see that bisphosphonate, calcitonin and teriparatide have been used as medical treatment in small-scale, randomized and uncontrolled case studies in the literature. Although there is no clear guideline on the duration of use, it should be kept in mind that bisphosphonate treatment may lead to fetal malformations in pregnant women with TOH.<sup>[10, 13]</sup> Since calcitonin cannot pass through the placenta, its use in pregnant women is safer.<sup>[14]</sup> While core decompression therapy gives successful results in AVN, it has not been shown to be superior to medical treatment in TOH.

Although TOH is generally self-limiting, sub-capital fracture and femoral neck fracture can be seen, cases with AVN have been reported in the literature.<sup>[10, 15]</sup>

To sum up, TOH should also be considered in the differential diagnosis of hip pain. The diagnosis should be made clearly with MRI and conservative treatment should be administered in the foreground. However, larger and more controlled studies are needed for medical treatment.

#### Disclosures

**Informed Consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

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