



## A Rare Case of Transient Osteoporosis of the Knee Presented During Pregnancy

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### Abstract

Transient Osteoporosis is a rare disorder mainly affecting pregnant women in their third trimester, as well as middle-aged men. A 39-year-old woman presented with severe pain of right knee in the third trimester, of pregnancy. Imaging of the knee with Magnetic Resonance Imaging (MRI) obtained 3 months after the C-Section demonstrated bone-marrow edema of the distal metaphysis of the femur and proximal metaphysis of the tibia and fibula with consequent trabecular fractures of condyles with periosteal response. The patient was treated conservatively by physical therapy. Repeated MRI performed 1 year after the onset of the symptoms revealed almost complete regression of the massive bone-marrow edema.

**Keywords:** Transient osteoporosis; Third trimester of pregnancy; Bone marrow edema

### Introduction

Transitional Osteoporosis (TO) is a syndrome of an unknown etiology, characterized by transient self-limiting pain in the joint accompanied by a finding of bone edema on the MR. The disease most often affects the hips, but can also affect the knees, ankles and feet [1,2]. The disease is most commonly one-sided, but a bilateral phenomenon is also described. This type of syndrome is most commonly associated with middle-aged men and women in the third trimester of pregnancy [3].

This paper presents thirty-nine year old patient with transitory osteoporosis of the knee that appeared in the third trimester of pregnancy.

### Case Presentation

A 39-year old patient presented with the pain in both knees, but more severe of the right knee. Joint pain began spontaneously in the 7<sup>th</sup> month of pregnancy, followed by a difficult loaded the right leg and limping, symptoms were of a progressive character. This was patient's first pregnancy. The patient was otherwise healthy but has been treated for infertility. Eleven days before the expected delivery the patient was hospitalized. At that time pain estimated by a Visual Analogue Scale (VAS) was 10 in motion and in rest the patient was without pain. The birth was executed by C- Section because of the eclampsia. Three weeks after delivery the patient was examined by rheumatologist. At that time the patient was in wheelchairs and she complained of pain in both knees, denying general symptoms. Patient's clinical appearance was dominated by the difficulty of mobility, the patient was able to verticalize from the sitting position, make a few steps with the help of 2 crutches. The right knee was hyperthermic, with the positive signs of intra articular effusion, and in a flexion contracture of 20 degrees. The clinical diagnosis of undifferentiated oligoarthritis was set up. Laboratory tests made the same day were all within the reference values. The X- ray of the knees demonstrated reduced mineralization of metaphysis of tibia and femur, both with slightly reduced joint space of both median intercondylar hinges without reactive changes, also it showed symmetrically thickened para-articular soft tissue. The MRI of the knees was planned. In the treatment of the patient's condition we recommended physical therapy (individual kinesitherapy, electrostimulation of quadriceps muscles and knee electromagnetotherapy), which the patient started five weeks after childbirth. The physical therapy resulted with reduced pain, a better knee movement, improved mobility and the patient was walking with the aid of one crutch. Five months from the onset of the disease, imaging of the right knee with an MRI was obtained and it demonstrated a massive stain bone-marrow edema of the distal metaphysis of the femur and proximal metaphysis of the tibia and fibula with consequent trabecular fractures of condyles with periosteal response. These changes are typical for diagnosis of transitory osteoporosis. Six months from the onset of the disease, the patient

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was no longer complaining of knee pain. The knees were euthermic, with no signs of intra articular effusion and with a preserved movement of joints. Repeated knee MRI, 1 year from the onset of the symptoms, revealed almost complete regression of the earlier present massive bone-marrow edema of the distal metaepiphysis of the femur and proximal metaepiphysis of the tibia and fibula with only some residual zones of mild edema. In the same period, the patient was without any subjective problems and she presented without any sign of knee pathology.

## Discussion

The rare occurrence of this syndrome, non-specific clinical and radiological images contribute to the difficulty of recognizing this disease. The syndrome was first described by Kurtis and Kincaid in 1959. On the hip joint in three pregnancies [1]. There are different hypotheses about the etiology of this condition. Proposed etiologies include nerve compression, vascular insufficiency, and changes in the fibrinolytic system during pregnancy. Also some authors believe that TO is a type of chronic regional pain syndrome without previous trauma, but the exact etiology remains vague [4-6]. The most commonly affected is hip joint, but transitory osteoporosis can also affect other leg joints such as knee, ankle and foot [7]. This syndrome should be suspected based on anamnesis and examination, but an MR [2] should be used to confirm the diagnosis. Transient osteoporosis is characterized by sudden localized pain, which is present in the loading of the joint and is absent in rest. It is also characterized by reduced movement of the affected joint, non-specific laboratory findings, and uncertain radiological findings [8,9]. Differential diagnostic considerations include avascular necrosis, stress fractures, neoplasms, inflammatory arthritis and bone injuries [3]. On the standard x-ray structure of the bone is osteopenic, while the MR confirms diagnosis with high-signal bone in edema of T2 sequences. The gold standard for diagnosing TO is MR that shows bone edema 48 hrs after the onset of symptoms [4]. Bone marrow edema on the MR is a non-specific finding that occurs in various pathological conditions of the knee. In the finding of bone marrow edema on the knee MR and without the presence of Avascular Osteonecrosis (AVN), meniscus or osteoarthritis injuries must be suspected of transitory osteoporosis. Due to different prognoses and approaches to treatment, it is important to distinguish between AVN and TO, the latter being self-limiting and treating conservatively while AVN is progressive and may require surgical treatment. The above mentioned MR is of exceptional help [10]. TO can be objectified by scintigraphy of a skeleton with Tc-99m showing increased accumulation of radioisotope, while in AVN it is reduced and shows "cold point" [4].

Since TO is a self-limiting disease, in therapy is recommended to take non-steroidal anti-inflammatory drugs, physical therapy, relieve

the affected joint, and sufficient vitamin D and calcium intake to accelerate the healing process. Some of the drugs used postpartum are bisphosphonates (alendronate, pamidronate, ibandronate and zoledronic acid), glucocorticoids, prostaglandins and calcitonin. Studies suggesting the use of these drugs were conducted on a small number of subjects [9]. In most patients, with adequate diagnosis and adequate treatment, a regression of symptoms is expected in 3 to 6 months with simultaneous withdrawal of the radiological finding [7].

## Conclusion

Diagnosis of TO is usually delayed, and treatment is often inadequate. It is important to suspect on transient osteoporosis in pregnant women in the third trimester of pregnancy, which is presented with the sudden onset of pain in one joint, and the clinical finding is not correlated with the severity of the pain. With an early diagnosis unnecessary invasive treatment approach can be avoided.

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