A Case of Non-Traumatic Avascular Necrosis of Femur in Case of Transfusion-Dependent Thalassemia

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Abstract

Introduction: Avascular necrosis of the head of femur (AVNF) has frequently been reported with sickle cell anemia but is not commonly associated with beta thalassemia.

Case Report: We report a case of 14-year-old male with transfusion-dependent thalassemia (TDT) and hepatitis C, who developed bilateral atraumatic AVNF requiring surgical correction. The likely etiopathogenesis and the review of literature for this uncommon finding are discussed.

Conclusion: AVNF should be considered as a possibility in a patient with TDT presenting with hip pain. Multiple disease and treatment related factors are likely to play a key role in its causation.

Keywords: Avascular necrosis of femur, transfusion dependent thalassemia, interferon.

Introduction

Transfusion-dependent thalassemia (TDT) patients are known to develop a number of osseous abnormalities. However, avascular necrosis of the head of the femur (AVNF) has been very rarely reported in this population despite the wide prevalence of TDT in our part of the world.

Case Report

A 14-year-old young boy with TDT on regular chelation presented with progressively worsening pain in both hip joints associated with limp for 6 months. Plain radiographs were unremarkable. The bone mineral density evaluation showed mild osteopenia. Magnetic resonance imaging revealed bilateral AVNF, with the right side being more severely affected (Fig. 1). He had been optimally transfused. He had received deferiprone in the past, but this had been discontinued over 2 years ago due to arthralgias. He was currently receiving deferasirox chelation therapy at 40 mg/kg/day, and the most recent serum ferritin was 2600 ng/ml. He had been detected to be seropositive for hepatitis C 2 years ago and had been commenced on treatment with interferon alpha. The hip pain first became evident in the past month of interferon therapy.

He was initially managed conservatively with bed rest and analgesia. However, in view of poor response to conservative management and...
AVNF has also been reported in patients with hepatitis C who have received interferon therapy. Landerreche et al. reported five patients of AVNF with hepatitis C infection treated with pegylated interferon [7]. Lauer and Walker hypothesized that viral infections itself involve an autoimmune process and may result in transient vasculitis [8]. In a study by Galli et al., thrombotic tendencies have been reported with viral hepatitis [9]. Interferon alpha in itself is known to have anti-angiogenic properties and may affect vascularization of the femoral head leading to AVNF [10].

**Conclusion**

AVNF in patients with TDT may have a multifactorial etiology and it may be difficult to identify one key factor. Even in our patient, there may have been interplay of multiple factors, important ones being D deficiency, endocrinopathies such as hypogonadism and growth hormone deficiency, and the thalassemia genotype. However, its association with AVNF has not been commonly reported. Extensive review of literature shows only a few case reports of avascular necrosis complicating thalassemia major. It was first described in 1986 in four patients in a series of 280 thalassemics [1, 2]. The authors speculated the predisposing factors to be anemic hypoxia and/or osteopenia. Katz et al. in 1994 while studying the pattern of bone diseases in TDT reported two cases of AVNF [3]. In another anecdotal report by Levin et al. in 2000, two cases were reported in a cohort of 79 patients of thalassemia major, but both of them had severe hemosiderosis and one had chronic hepatitis C [4]. The author in the above case report speculated protein C deficiency secondary to liver hemosiderosis as an additional risk factor for AVNF in TDT. Two more recent case reports describe AVNF in TDT patients [5, 6]. Table 1 summarizes the cases of AVNF in TDT reported to date.

**Clinical Message**

Any patient with Thalassemia major who complains of persistent hip pain should be evaluated for a vascular necrosis of head of femur especially if receiving interferon therapy.

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