

## A Strange Gait

A 5-year-old afebrile girl presented to the office with an antalgic limp and left foot pain that lasted 3 weeks. On physical examination, swelling and redness were present and the top of the midfoot was painful to touch. Weight-bearing radiographs of the 2 feet were obtained (Figures 1-3; Figures 1 and 2 available at [www.jpeds.com](http://www.jpeds.com)). The left foot navicular bone appears “wafer like”—flattened with increased density corresponding to sclerosis.

These findings were consistent with Köhler disease, a rare condition of unknown etiology.<sup>1-4</sup> It involves the navicular bone of the foot, the last tarsal bone to ossify. This bone could be compressed between the already ossified talus and the cuneiforms when the child becomes heavier or by stresses caused by repeated running, jumping, and hopping.<sup>2,3</sup> This mechanical compression involves the central spongy bone vessels, leading to ischemia and subsequent bone degeneration.<sup>3</sup> It typically presents in the pediatric population (3-9 years of age), has a male predominance, and usually affects just 1 foot.<sup>1-5</sup> Children present with a limp and may walk on the outside border of the foot to relieve pressure in the arch area.<sup>1</sup>

Köhler disease has a good prognosis, and most children improve with restriction of their activity and the use of anti-inflammatory drugs. Occasionally, like for this patient, a weight-bearing below-the-knee cast is necessary in a moderate varus ( $10^{\circ}$ - $15^{\circ}$ ) position.<sup>4</sup> Surgery is not indicated.<sup>1,2,5</sup> The

perichondrial ring of vessels allows rapid revascularization and the formation of new bone.<sup>3</sup> Normal radiographs at adolescence or adulthood are the rule.<sup>1</sup> ■

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### References

1. Borges JL, Guille JT, Bowen JR. Köhler's bone disease of the tarsal navicular. *J Pediatr Orthop* 1995;15:596-8.
2. Khan AQ, Sherwani MA, Gupta K, Siddiqui YS, Hali NZ. Köhler disease. *Saudi Med J* 2008;29:1357-8.
3. Waugh W. The ossification and vascularisation of the tarsal navicular and their relation to Köhler disease. *J Bone Joint Surg Br* 1958;40-B:765-77.
4. DiGiovanni CW, Patel A, Calfee R, Nickisch F. Osteonecrosis in the foot. *J Am Acad Orthop Surg* 2007;15:208-17.
5. Tsirikos AI, Riddle EC, Kruse R. Bilateral Köhler's disease in identical twins. *Clin Orthop Relat Res* 2003;409:195-8.



**Figure 3.** Lateral right foot radiograph showing a normal navicular bone.



**Figure 1.** Anteroposterior radiograph of the feet showing the different navicular bones.



**Figure 2.** Lateral left foot radiograph showing the flattened aspect of the navicular bone.