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## Kohler's disease mimicking osteomyelitis: A case report

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### Abstract

Kohler's disease is a rare cause of limping among pediatric population due to impaired blood supply to tarsal navicular bone. It is a condition of unknown etiology affecting children between 3-7 years of age with male preponderance. It is a good mimicker of other common causes of a limping child which is an elusive entity for physicians. Adequate clinical suspicion and knowledge is paramount for proper utilization of advanced diagnostic tools and to prevent a delayed diagnosis.

Here we present a case of Kohler's disease in a 5 years-old boy with clinical features mimicking osteomyelitis.

**Keywords:** Kohler's disease, navicular bone, limping, osteomyelitis

### Introduction

Limping & foot pain are common symptoms among children who presents to orthopedic department <sup>[1]</sup>. An immediate diagnosis of a limping child is often difficult to achieve due to broad spectrum of underlying causes <sup>[2]</sup>. Common differential diagnosis in a limping child are transient synovitis, trauma, septic arthritis & osteomyelitis <sup>[3]</sup>.

Kohler's disease is one of the rare causes of pain & limping in children mimicking trauma or osteomyelitis which can be diagnosed by adequate clinical suspicion & radiological evaluation <sup>[4]</sup>.

### Case Report

A 5-year-old boy presented to outpatient department with complaints of pain and swelling of right foot associated with limping for past one week. He had a history of fever for past 3 days for which patient was on antipyretics as advised by pediatrician. There was a history of trivial trauma to right foot, of one-week duration while playing. There was no history of poly arthralgia. On examination the child was febrile, there was local rise in temperature and tenderness over dorsomedial aspect of right foot. Active hip, knee and ankle movements were full and pain-free. On further evaluation his blood parameters showed marginally elevated leucocyte count (11500 cells/ mm<sup>3</sup>), ESR (34 mm/hr) & CRP (11 mg / L). Radiograph of right foot was taken with an initial clinical diagnosis of osteomyelitis or traumatic foot injury in mind. X-ray showed flattening, fragmentation & sclerosis of navicular bone of right foot, suggestive of Kohler's disease (Fig 1).

MRI was taken to confirm the diagnosis (Fig 2, 3). Parents were assured about the self-limiting nature of the disease and patient was advised short leg walking cast for four weeks and short course of ibuprofen for pain relief. At four weeks follow up, patient was asymptomatic. Short leg walking cast was removed. Blood parameters were rechecked and was within normal limits. At three months follow up patient was asymptomatic and X-ray showed reossification and restoration of navicular height (Fig 4).

### Discussion

Limping is a common symptom among children presenting to orthopedic department. A careful & systemic evaluation can shorten the long list of potential diagnosis to aid in appropriate diagnostic tests to determine the cause of symptoms <sup>[1]</sup>. Common differential diagnosis in a limping child includes transient synovitis, trauma, septic arthritis & osteomyelitis <sup>[3]</sup>. Kohler's disease is one of the rare causes of pain & limping in children which can mimics trauma or osteomyelitis.

Kohler's disease, which was first described by Alban Kohler in 1908 refers to rare avascular necrosis of tarsal navicular bone. It is self-limiting disease seen in pediatric population & has excellent prognosis<sup>[4]</sup>.

It is more commonly seen among male children aged 2-10 years. Exact etiology of the disease is not fully understood. It is thought to be due to compromised blood supply to navicular bone prior to its ossification<sup>[5]</sup>.

Due to its late ossification relative to other tarsal bones, microtrauma to cartilaginous navicular bone could induce ischemia through disruption of arterial supply or venous congestion<sup>[6]</sup>.

Radiological features of Kohler's disease include patchy areas of sclerosis & rarefactions with loss of normal body trabecular pattern. The navicular may appear fragmented or collapsed<sup>[7, 8]</sup>.

Management of Kohler's disease is non-operative.

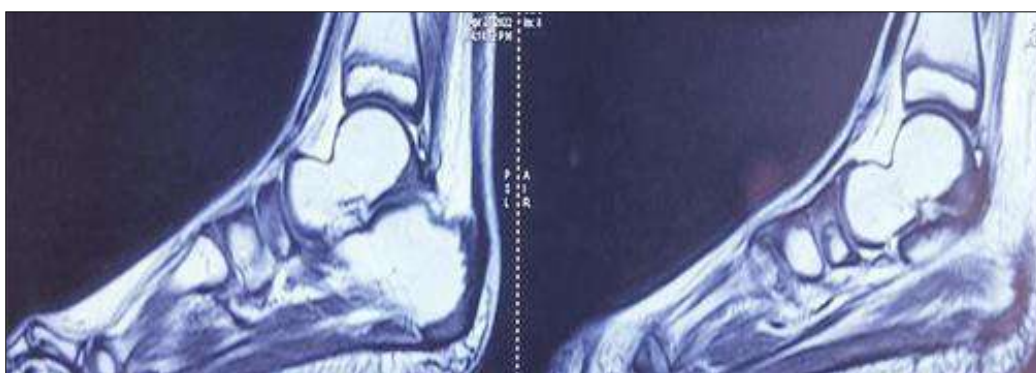
Symptomatic patients are managed with rigid sole shoes, arch support, non-weight bearing with support or by casting. Studies by Williams & Cowell noted trends to earlier resolution of symptoms with immobilization in a weight bearing short leg cast combined with alternative treatment<sup>[9]</sup>. There are no reported cases in the literature that describes the use of operative treatment in the acute management of Kohler's disease.

In patients with recalcitrant symptoms additional investigations are warranted to identify alternative causes such as tarsal coalition, accessory navicular and osteomyelitis.

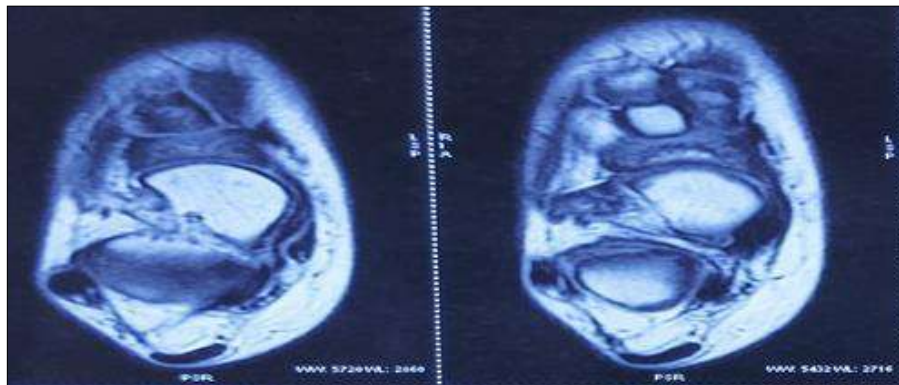
Our patient had a history of fever and marginally elevated acute phase reactants which warranted infection as primary diagnosis. But radiological investigations along with improving blood parameters helped to reach diagnosis of Kohler's disease.



**Fig 1:** X-ray showing flattening, fragmentation & sclerosis of navicular bone



**Fig 2:** Sagittal MRI cuts showing loss in volume and rim of sclerosis with marrow oedema in naviculum.



**Fig 3:** Coronal MRI cuts showing marrow oedema in naviculum.



**Fig 4:** Third months X-ray showing reossification and restoration of navicular height.

### Conclusion

Kohler's disease is an uncommon idiopathic transient avascular necrosis of the talar navicular bone. The normal delay in ossification may result in the vulnerability of the navicular bone to withstand regular loads. Children present clinically with limp and moderate midfoot pain. Imaging can diagnose the presence of Kohler's disease and exclude other entities. The final diagnosis is based on the age of the patient, the clinical history and the imaging findings. The treatment is symptomatic. The overall outcome is excellent. In young children with midfoot pain and limping, Kohler's disease should be added to the differential diagnostic list because it is self-limited with an excellent prognosis.

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