

INFANTILE BLOUNT DISEASE: A CASE REPORT

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ABSTRACT

Blount disease is an acquired growth disorder of the medial aspect of the proximal tibial physis, epiphysis and metaphysis. Infantile Blount disease presents with bowing and length discrepancy in the lower limbs. The deformed medial tibial metaphysis represents as nontender bony protuberance can be palpated along the medial aspect of the proximal tibia. Here, we present an 18-month-old boy presented with the complaints of bilateral bowing of lower limb with normal biochemical investigation and radiological survey revealed Blount disease.

Keywords: Blount disease, bowing, epiphysis

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INTRODUCTION

Blount disease is defined as a growth disorder of the medial aspect of the proximal tibial physis, with abrupt medial angulation leading to varus angulation of the proximal tibia and medial rotation of the tibia. There are three main types: (a) Infantile tibia vara (Blount's disease) manifests in patients aged 1-3 years with typical radiographic findings (b) late-onset juvenile, and (c) late-onset adolescent.¹ The differentiation between physiological bowlegs and infantile Blount's disease (IBD) in patients aged 11-30 months is very difficult. The child with IBD presents with bowing and length discrepancy in the lower limbs and along the medial aspect of the proximal tibia a nontender bony protuberance can be palpated. The lower limb radiograph demonstrates the beaking of the proximal medial tibial metaphysis and a sharply angulated slope of the medial metaphysis of the proximal tibia.² Treatment depends on the age of the patient and the severity of the condition.

CASE REPORT

An 18-month-old boy presented with the complaints of bilateral bowing of lower limb since last 1 year. There were no other complaints. Birth history was normal with birth weight of 2.8 kg. His language and mental milestone were normal. He started walking without support at the age of 11 months. No similar complaints in the family or past history of trauma. The child was short statured, with weight of 9.7 kg and observed height being 85 cm. Upper segment to lower segment ratio was 1.4:1. On general examination, the child was found to have normal contour of the head without facial dysmorphism.

Anterior fontanelle was closed. Clinical signs of rickets were absent like widening of wrist, frontal bossing, rachitic rosary, double malleoli, etc. Vital signs were stable. He had bilateral bowing of lower limb (Figure 1). There was no other apparent congenital malformation and systemic examination revealed no abnormality. On investigation, complete blood cell count was: Hb: 106 g/L, Total white count: $7.5 \times 10^9/L$ (neutrophil 53%, lymphocyte 35%, monocyte 12%) and platelet count: $430 \times 10^9/L$. Serum urea, creatinine and electrolytes were normal. The biochemical investigation revealed serum calcium, inorganic phosphorous and alkaline phosphatase levels of 9mg/dl, 8.1mg/dl and 206 IU/l respectively. Radiograph of both lower limb revealed bowing and abnormality at the medial aspect of the proximal tibia with metaphyseal-diaphyseal angle was around 30° indicated as tibia vara (Figure 2). The lateral knee X-ray was suggestive of posteriorly directed projection at the proximal tibial metaphyseal level.

DISCUSSION

Bowing of leg is a common problem in the child. It may be physiological or pathological. Physiologic bowing will improve as the child grows without treatment, while pathologic bowing will tend to worsen over time without treatment. So it is very important for the physician to identify the physiological or pathological bowing of leg. Blount disease, pathological bowing of leg, is a result from abnormal stress on the posteromedial proximal tibial physis, causing growth suppression. The predisposing factors are early walking, obesity, and African-American descent. It becomes obvious between the ages of two and four as the bowing gets worse. The common cause is



Figure 1. A child with bilateral bowing of leg.



Figure 2. Radiograph of the lower limb (AP view) showing abrupt medial angulation "beaking" of the medial cortical wall of the proximal tibial metaphysis

abnormal stress placed on the posteromedial proximal tibial epiphysis that leads to growth suppression. In about 60% of cases this condition affects both legs. Erlacher reported the first case of tibia vara in 1922.³ The main predisposing factors include obesity, early walking, and black ancestry. Three major types of Blount disease i.e. (a) Infantile tibia vara manifests in patients aged 1-3 years (b) late-onset juvenile occurs in persons aged 4-10 years, and (c) late-onset adolescent occurs in persons aged 11-14 years.^{3,4}

Infantile:

- Non-tender bony prominence or "beak" may be palpable over the medial tibial condyle
- Excessive medial tibial torsion
- Pronated feet
- Shortening of the involved leg

Juvenile/Adolescent:

- Pain and tenderness over the medial prominence of the proximal tibia
- Mild medial knee ligamentous laxity
- Obesity
- Shortening of involved leg up to 3-4 cm

Early diagnosis and treatment of this disease is vital to avoid progressive worsening. In infantile Blount disease, radiograph of lower limb demonstrate bowing and abrupt medial angulation "beaking" of the medial cortical wall of the proximal tibial metaphysis. On lateral knee radiographs showed posteriorly directed projection at the proximal tibial metaphyseal level.^{4,5} The metaphyseal diaphyseal angle of 11° (this angle is formed by lines between metaphyseal beaks & perpendicular to the longitudinal axis of the tibia) and tibial/femoral angle greater

than 15°. Giwa OG *et al*⁶ reported that in patients with Blount's disease, the serum concentrations of inorganic phosphate and calcium were lower and alkaline phosphatase activity was increased in the serum than controls group, like in our case also.

The differential diagnosis of Blount disease includes:^{7,8}

- Physiologic bowing is usually a self-limited condition, recognized by smoothly curved bowing of the femur and tibia and usually resolves by 18-24 months of age.
- In congenital bowing, angulation may occur in the middle portion of the tibia, with a normal appearing distal femur and proximal tibia.
- In rickets, typical radiological feature like fraying, splaying and cupping at the metaphyseal end with biochemical abnormalities which was normal in our case.
- In Osteomyelitis, growth plate disturbance occurred secondary to infection.
- In metaphyseal chondrodysplasia, multiple metaphyseal deformities are seen with rickets-like radiologically changes without serum biochemical abnormality.
- Ollier disease differentiated easily on radiographs by the presence of enchondromas from Blount's disease.
- History of trauma present in traumatic deformity, which lead to growth-plate injuries of the proximal tibia.

Radiographic changes found in Blount disease are usually diagnostic. Treatment depends on the age of the child and the severity of the disease. Severe bowing before the age of three is braced with a hip-knee-ankle-foot orthosis or knee-ankle-foot orthosis. If the deformity does not correct before

age 4-5 years, or if the patient presents with a moderate to severe deformity, corrective surgery such as a proximal tibial osteotomy is indicated.⁹ A tibial osteotomy is done before permanent damage occurs. Brace treatment for adolescent Blount's is not effective and requires surgery to correct the problem.

If the deformity does not correct before age 4-5 years, or if the patient presents with a moderate to severe deformity, corrective surgery such as a proximal tibial osteotomy is indicated.⁹ Failure to treat Blount's disease may lead to progressive deformity.

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Sublingual vitamin B12 reduces and improves pain in recurrent aphthous ulcer

Volkov I, Rudoy I, Freud T, *et al*. Effectiveness of vitamin B12 in treating recurrent aphthous stomatitis: a randomized, double-blind, placebo-controlled trial. *J Am Board Fam Med.* 2009; 22(1):9-16

58 patients with recurrent aphthous ulcer randomized to received sublingual vitamin B12 1000 µg or matching placebo. The duration of outbreaks, the number of ulcers, and the level of pain were reduced significantly at 5 and 6 months of treatment with vitamin B(12), regardless of initial vitamin B(12) levels in the blood.