

Blount's Disease in Children

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ABSTRACT

Blount's disease is an unusual growth disorder that affects children. It causes the legs to bow outwards just below the knees. A slight bowing is usually quite common in young infants. Many babies are born with slightly bowed legs from being in the small space of the womb, but legs usually straighten out as they grow and start walking.

Keywords: Blount, cartilage, fractures, tibial

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INTRODUCTION

Erlacher was the first to describe a case of Tibia Vara in 1922. Since Walter Blount brought attention to the disease in 1937 and he was the first to identify the similar clinical, radiographic, and pathologic characteristics of the cases, the disease has become associated with Blount. Later, in 1952, Langenskiold defined a progression of radiographic changes seen with the disease in the Scandinavian population [1].

Risk Factors

- Kids who are overweight and have an increased body mass index
- Mechanical stress
- Female children
- More common in people of African heritage
- Children who start walking at an early age
- Those with a history of the condition in a family member [2]

Pathophysiology

Blount disease is a developmental disorder described by a disorder in growth of the medial factor of the proximal tibial physics which leads to progressive lower limb deformity. Though it is also referred to as

tibia vara (because the varus coronal plane deformity is most distinctive), the disease generally results in a multiplanar malformation of the limb. Damaged cartilage hardens in a detained manner. As growth is selectively restrained at the average side of the knee due to these compressive forces, a resultant varus deformity progresses. The malformation consists of varus, procurvatum, and internal rotation of the tibia. This pattern leads to the asymmetry of disordered physical growth most prominent in the postero-medial aspect of the proximal tibial physis. In Blount disease, so much pressure is put on the growth plate at the top of the tibia. As a result, the bone can't grow normally. The lateral side of the tibia continuously growing but the medial side of the bone does not. This uneven bone growth results in the tibia to bend outward instead of growing straight. Blount disease can also be connected with a limb length discrepancy where, one leg may also become slightly shorter than the other and deformity of the distal femur as well in some [3].

Signs and Symptoms

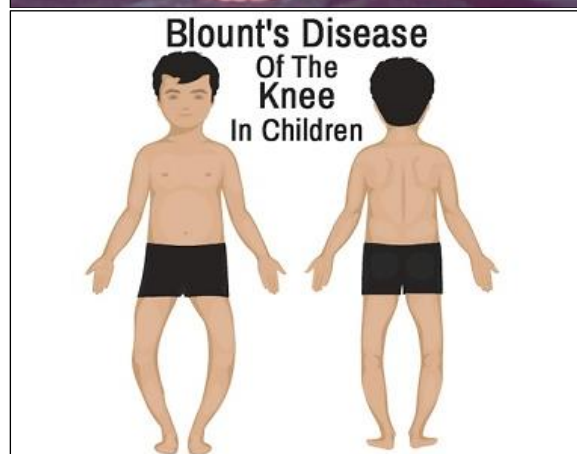
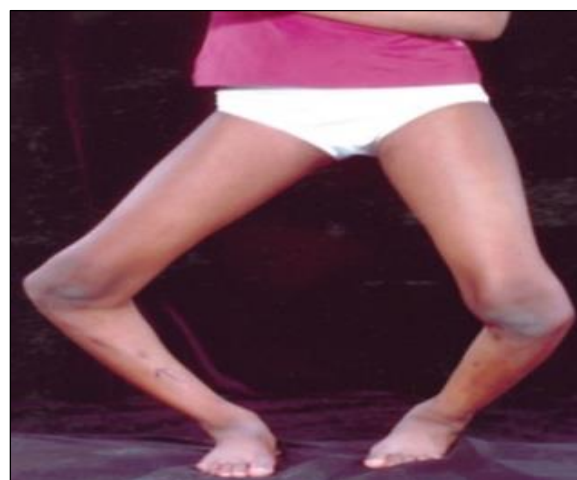
- Bowing of the leg below the knee.

- Usually there is no pain, but it can affect the way the child walks.
- For preteens and teens, Blount disease may cause knee pain that gets worse with activity.
- The tibia can be spin as well as bowed, resulting a condition called in-toeing

(when the feet point inward despite of straight out).

- It can cause arthritis of the knee joint.
- In serious cases, it causes trouble in walking.

Figures of Blount Disease



Diagnosis

Diagnostic radiography helps in accurately diagnosing Blount's disease. Changes in anatomy can be visualized on an anterior projection of the lower limb. Langenskiold classified these changes into 6 different stages or types of Blount's disease that progress over time.

- Type I: Medial metaphyseal breaking.
- Type II: Saucer shaped abnormality of medial metaphysis.
- Type III: Saucer deepens into a step.

- Type IV: Epiphysis bent down over medial beak.
- Type V: Double epiphysis.
- Type VI: Development of medial physical bony bar [4].

Treatment

Knee-Ankle-Foot Orthotics (KAFO)

Treatment of Blount disease largely depends on a child's age and how curved the bone is. Commonly, for children between two and four years of age, Knee-ankle-foot orthotic braces which go from

the thigh to the toes, are artificially made for kids using a mold of their leg. This will help the braces gradually shift leg bones to a straighter position over time.

- **Osteotomy**

The surgeon can cut the bone, straighten it, and fasten it with plates and screws.

External Fixator

A device called an external fixator can be put on the outside of the leg and attached to the bones after they are cut. This holds the bones in place while gradually straightening the leg. After the surgery, the child may wear a cast or use crutches and a wheelchair for a while.

- **Physical Therapy**

Physiotherapy also might be needed [5].

Complications

General Complications

- Recurrence of deformity
- Multi-planar deformity and degenerative arthritis later in life if untreated

Surgical Complications

- Compartment syndrome
- Deep vein thrombosis
- Pathologic fractures
- Wound infection
- Malalignment [6]

Nursing Considerations

- Child and parents need reassurance and emotional support
- Child needs to be prevented from injuries and falls
- When child is posted for surgical correction, routine preoperative care is necessary

- Post operatively child needs to be monitored for vascular complications
- If the child is obese, health education is to be given to parents on a well-balanced nutritious diet
- Discharge planning and follow up care are to be made by the nurses

CONCLUSION

This article describes Blount's disease in children. For children less than 3 years, bracing can be done, but the prognosis can be good when surgical correction is considered in children about three years of age, and the child can be prevented from further abnormalities. Hence, it is necessary that all modalities are employed and all efforts made to recognize and educate parents about Blount's disease.

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