

## Case Report

### Tibia Vara due to Focal Fibrocartilagenous Dysplasia

A. Tavakoli MD\*

#### Abstract

We present a case of unilateral tibia vara associated with an area of focal fibrocartilagenous dysplasia in the medial aspect of the right proximal tibia. Such a case has not been described previously. The affected child was 8 months old. Deformity resolved without aggressive treatment. The pathogenesis of the focal lesion remains controversial. The most likely explanation is that the mesenchymal anlage of the tibial metaphysis has for unknown reasons, developed abnormality at the insertion of the pes anserinus.

**Key words:** Tibia Vara, Pes Anserinus

**G**ross unilateral bowing of the tibia is rare in early childhood<sup>1, 2</sup>. The common postural bowing of the toddler is sometimes unilateral but the varus deformity is neither as severe as in the child discussed here, nor is local bony pathology a common feature. Unilateral tibia vara may be due to Blount's disease, dyschondrosteosis, fibrous dysplasia, Ollier's disease, neurofibromatosis or trauma<sup>3, 4, 5</sup>. The child presented here showed none of the features of any of these conditions. Approximately 28 cases have been reported in literature so far<sup>6, 7</sup>.

#### Case History

This girl was referred at the age 15 months. When she was eight months, it was noticed that her right leg was bowed. In examination, the right leg was varus and 1 cm shorter than the left. The knee joint was hyperextended with lateral thrust during standing and walking (figure 1).

No abnormality was noted in any others limbs. There was no skin markings overlying the proximal tibia. The child was healthy and she had a normal antenatal and postnatal history. No member of the family had already suffered from a similar condition.

Radiographs showed a lesion in the medial cortex just near the metaphysical-diaphysial junction not involving the physis. There was cortical sclerosis in and around the area of abrupt varus on medial cortex. Radiolucency was present just proximal to the

area of sclerosis (figure 2). After seven month, of KAFO orthosis application, her leg looked nearly normal (figure 3) and radiographs showed less tibia vara with less scalloping but persistent sclerosis (figure 4).

The diagnosis was based on history, clinical signs and radiological findings.

#### Discussion

The case presented here had severe unilateral tibia vara. Her parents noticed the deformity when the child was 8 months old (figure 1). Radiographs showed a punched-out circumscribed lesion at the site of insertion of pes anserinus.

Biopsy in similar cases showed dense fibrous tissue, reminiscent of tendon in its structure and arrangement<sup>1, 2</sup>. In addition, there are foci in which the fibroblast lay in lacunae, producing an appearance that resembled fibrocartilage.

This histological appearance is very unusual. It does not resemble a radiologically fibrous defect, a lesion with which it could be confused radiologically. Although close to epiphysis, the lesion was obviously not epiphysial since it was not composed of hyaline cartilage. In fact there was no hyaline cartilage within the lesion at all (figure 4). For this reason periosteal chondroma, which has a similar radiological appearance was excluded.

The intimate relationship of the lesion to the insertion of pes anserinus was striking. Similar

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\*Assistant Professor, Department of Orthopedics, Isfahan University of Medical Sciences, Isfahan, Iran.

Correspondence to: Dr AbdolReza Tavakoli, Department of Orthopedics, Isfahan University of Medical Sciences, Isfahan, Iran.



**Figure 1.** The child before application of orthosis



**Figure 3.** Treatment started with application of knee-foot orthosis



**Figure 2.** The antero-posterior x-ray of knee before treatment in the case. Note the metaphyseal diaphysial angulation with sclerosis and hyperlucency in proximal tibia.



**Figure 4.** After treatment x-ray showing the improvement of angulation and sclerosis

tissue is normally found at the site of tendon insertion into cortical bone. A narrow zone of tissue occurs between tendon and bone that closely resembles fibrocartilage, except with respect to the amount of material seen in the lesions. It therefore seems possible that in these children abnormal development of fibrocartilage has occurred at the site of insertion of pes anserinus.

The reason for this malformation is unknown but considering the early onset in this case, it is presumably a developmental anomaly beginning in uterus<sup>3-5</sup>. It seems possible that the mesenchymal anlage in the area of pes anserinus fails to differentiate normally and forms too much fibrocartilage; this in turn would interfere with growth on the medial

aspect of the proximal tibia to produce varus deformity<sup>6,7</sup>.

It is not clear how these cases resolve spontaneously (figure 3 and 4). Presumably the abnormal tissue had been reabsorbed or it had differentiated into normal bone.

Surgical correction has been carried out by some orthopedic surgeons<sup>1, 3, 4</sup>. Although in some cases deformity may increase, the fact that spontaneous resolution can occur using KAFO orthosis, makes the value of surgery questionable. It is not clear whether operation is necessary but the emphasis should be put on conservative approach unless the appearance of the limb is too bizarre to be acceptable.

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