Correspondence

Metaphyseal-diaphyseal angle in Blount's disease

Sir—The implication that true Blount's disease can be diagnosed by measurement of the Levine-Drennan (1982) angle is erroneous, and if this has been the criterion by which Hägglund et al. (*Acta Orthop Scand* 1997; 68 (2): 167–169) have diagnosed this condition, then it is not surprising to find so much spontaneous resolution in Lund. The diagnosis of true infantile tibia vara requires the unequivocal presence of a characteristic radiographic lesion in the proximal medial tibial metaphysis and, without this radiographic *sine qua non,* one is looking at a case of physiological genu varum. While I agree that patients with large L-D angles are at risk and must be followed, there is no indication for treatment prior to the appearance of an unequivocal Blount lesion, which is often present between 18–24 months. The patient illustrated in Figure 2 (p. 169) cannot be diagnosed as having infantile tibia vara based on the radiograph provided, and therefore the assertion that this patient's Blount disease spontaneously resolved is not justifiable—his physiologic genu varum has resolved.

In many reports from the US and the Caribbean, true Blount's disease is a progressive and often frustrating deformity that should be corrected definitively, orthotically or surgically (Golding and McNeil-Smith 1963, Schoenecker et al. 1985, Ferriter and Shapiro 1987, Loder and Johnston 1987, Doyle et al. 1996). As pointed out (Loder and Johnston 1987), the Blount's disease which we treat in the southern USA seems to have a worse prognosis than that described in Scandinavian reports (Langenskiöld and Riska 1964), and therefore early treatment is indicated. If the Lund report of spontaneous resolution is to be believed, the authors will have to show radiographs of real Blount's disease, rather than physiologic genu varum.

Charles E Johnston II
Pediatric Orthopaedics and Scoliosis Surgery, Texas Scottish Rite Hospital for Children, 2222 Welborn Street, Dallas, Texas 75219, USA

Sir—The letter by Dr. Johnston raises three important questions:

1. What is Blount's disease and what is physiologic genu varum?

The diagnosis of Blount's disease is based on radiographic changes described by Blount amd Milwaukee (1937) and Langenskiöld and Riska (1964). The changes are: 1) a sharp varus angulation in the metaphysis, 2) a widened and irregular physeal line medially, 3) a medially sloped and irregularly ossified epiphysis, and 4) a prominent beaking of the medial epiphysis, having lucent cartilage islands in the beak (Johnston 1990).

The cases presented in our study were all diagnosed as Blount's disease based on these radiographic criteria. We agree that on the figure presented the diagnostic signs could not be clearly seen. On a closer view, however, the typical deformity is obvious (Figure).

Physiologic genu varum is usually defined as a varus deformity with a tibiofemoral angle of at least 10° of varus, a normal-appearing growth plate, and a medial bowing of the proximal tibia and distal femur (Feldman and Schoenecker 1993, Greene 1993).

However, as Dr. Johnston writes, at a young age, before 18–24 months, often one cannot distinguish between physiologic genu varum and Blount's disease—the bowed leg has the same radiographic appearance.

2. Which knee deformity is progressive and which is not?

Most knees with Blount's disease are progressive. Most knees with physiologic genu varum are self-correcting. In 1966, Blount wrote "Untreated osteochondrosis tibiae will likely become worse and go on to severe bowleg, but this is not always true". Cases of Blount's disease that resolve without treatment have been described earlier (Langenskiöld and Riska 1964, Medbö 1964, Blount 1966, Smith 1982). Our findings are thus not new, and we cannot agree with Dr. Johnston that Blount's disease is always progressive.

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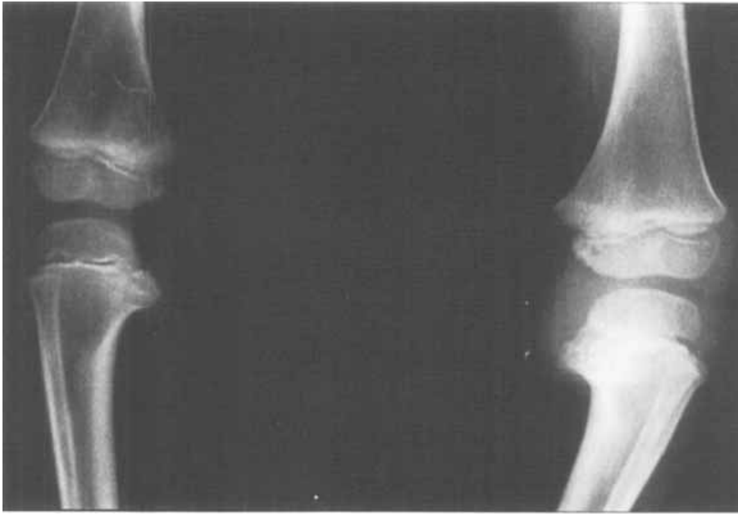

Case 12. A close-up view at age 3 years showing bilateral Blount's disease.

3. Which knees need treatment and which do not? This is the crucial question for the clinician. We believe that there is confusion in the literature caused by equating Blount's disease always with progressive disease and physiologic genu varum always with a self-correcting condition.

Several authors have suggested that physiologic genu varum and Blount's disease represent two parts of a continuum (Golding and McNeil-Smith 1963, Bateson 1968, Cook et al 1983, MacMahon et al. 1995). This view is supported by the similar radiographic findings at the early age before the diagnosis of Blount's disease is made. Most cases of bowlegged young children will spontaneously resolve, but if the mechanical pressure on the medial part of the knee is too high, progression will occur (MacMahon et al. 1995). Several factors, such as degree of angulation, localization of angulation, joint laxity, body weight, age at walking debut, race, sex, etc, determine whether the deformity will progress or resolve.

Our study and earlier ones (Langenskiöld and Riska 1964, Medbö 1964, Blount 1966, Smith 1982), have shown that the breaking point between knees that will spontaneously resolve and those that will progress is not the same as the radiographic breaking point between the physiologic varus knee and the varus knee with stigmata of Blount's disease.

It may be time to change our definition of genu varum. We all agree that if the deformity is progressive, it needs treatment—if it is self-correcting it does not. Thus, from a clinical point of view, it is easy. What makes it difficult is that, instead of analyzing whether the deformity is progressive or not, we are looking for the breaking point of the radiographic continuum between physiologic bowing and Blount's disease. We could, instead of the terms physiologic bow-leg and Blount's disease, simply define the knees as progressive or not progressive genu varum. We could then stop the discussion about defining Blount's disease and who needs treatment. We could stop discussing whether a radiograph shows physiologic bowing or early Blount's disease. Since more than one examination is needed to elucidate whether the deformity is progressive or not (unless a bone bridge is seen), the main message in our paper is automatically implemented: that a bowed knee must be followed with repeated examinations before one can decide whether treatment is needed.

Gunnar Hägglund[1], Thorvaldur Ingvarsson[1], Birgitta Ramgren[2] and Mohammed Zayer[3]

Departments of [1]Orthopedics and [2]Diagnostic Radiology, Lund University Hospital, S-221 85 Lund, Sweden, and of [3]Orthopedics, Ängelholm Hospital, Ängelholm, Sweden

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