

Understanding the aetiology of windswept deformity of the knee in Ghanaian children.

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Introduction

Little is known about children with gait abnormalities due to skeletal malformations. This research aims to increase knowledge on the aetiology of windswept deformity. This deformity is well known in Africa. The legs deform shortly after a child starts walking, resulting in walking difficulty, leg length discrepancy and early osteoarthritis. By gaining knowledge on the aetiology more effective preventive measures can be applied to children at risk.

AIM

To increase knowledge about the aetiology of windswept deformity, in order to take effective measures that prevent the deforming of the lower extremities in children.

Methods

After reviewing patient files and conventional radiography, 23 patients (between 0 and 18 years) with windswept deformity seen in a rural hospital in Ghana were included. Data was collected through medical records, interviews, physical examination and x-rays.

Results

Most of the patients developed a windswept deformity shortly after onset of walking which starts with a rapid evolution of a valgus position of one knee (table 1).



Figure 1: African child with windswept deformity

	Subgroup	n=23
Medical history	None	20 (88%)
	Sickle cell disease	1 (4%)
	Morbid obesity	1 (4%)
	Fracture distal femur	1 (4%)
History of Trauma	None	22 (96%)
	Fractured distal femur	1 (4%)
Affected leg start Windswept deformity	Valgus	15 (65%)
	Varus	3 (13%)
	Both	5 (22%)
Age of onset walking in months	Mean	17 mos. ± 5 mos. (Range: 9-24 mos.)
	9 mos.	1 (4%)
	12 mos.	6 (26%)
	14 mos.	1 (4%)
	15 mos.	1 (4%)
	18 mos.	9 (40%)
	24 mos.	5 (22%)
	0-3 mos.	12 (52%)
	3-6 mos.	6 (26%)
Timeframe in WSD developed after onset of walking in months	12-24 mos.	1 (4%)
	>24 mos.	4 (18%)

In 70% of the cases, patients had radiologically signs of Rickets. Other causes include dysplastic (Multiple epiphyseal dysplasia & Blount's disease), Traumatic (Distal femur fracture & Epiphyseal corner fracture) and idiopathic. Laboratory tests in 9 of the 12 patients showed a vitamin D deficiency.

Discussion and conclusion

This study suggests that windswept deformity usually develops with an initial valgus position which is later followed by a varus position on the contralateral side. As vitamin D deficiency rickets is the main underlying cause of windswept deformity, it is recommended that windswept patients receive a x-ray and have their vitamin D status determined.

Future Insights

Gaining more insight in the physiologic mechanisms of these abnormal growth processes in pediatric skeletal malformations may be useful since a lot of the aetiology and pathophysiology is still unclear. With our **future research** we investigate which growth factors like TGF-beta, IGF's and FGF's are of influence by examining the regulation of genes and protein synthesis in chondrocytes present in the epiphyseal plate. Investigating the influence of vitamin D can also be of great importance to better understand the growth process in the epiphyseal bones.

Vitamin D deficiency Rickets

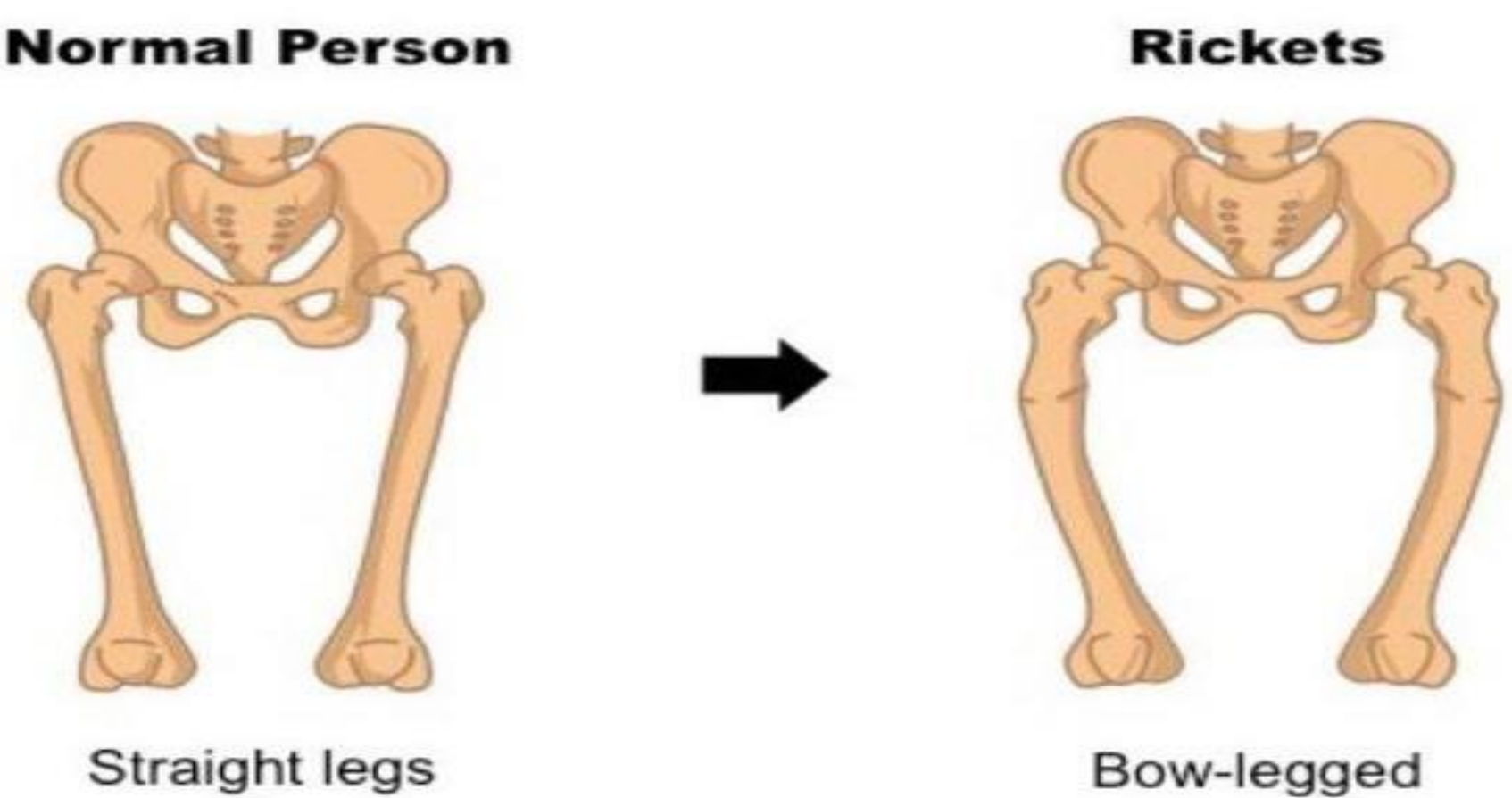


Figure 2: Patients vitamin D deficiency rickets have bow shaped legs