

**TABLE I** PATIENT CHARACTERISTICS ACCORDING TO SEX AND TYPE OF PRECOCIOUS PUBERTY (N=55)

Characteristics	Males		Females		Incomplete (n=7)
	Central (n=15)	Peripheral (n=4)	Central (n=19)	Peripheral (n=10)	
Age at onset, y	3.0 (3.2)	3.3 (3.7)	5.2 (2.5)	3.3 (1.9)	4.5 (3.2)
Age at diagnosis, y	3.6 (3.7)	3.4 (3.7)	5.8 (2.7)	4.3 (2.9)	6.4 (2.2)
Delay in diagnosis, y	0.6 (1.2)	0.2 (0.2)	0.7 (0.7)	1.0 (1.6)	1.8 (2.8)
BA advancement, y	4.1 (4.0)	5.6 (2.2)	4 (2.6)	2.6 (2.6)	1.2 (1.7)
Height Z-scores	1.2 (1.9)	-0.03 (2.8)	1.5 (1.4)	0.3 (1.7)	0.6 (0.6)
Basal LH, IU/L	4.1 (4.3)	0.1 (0.0)	2.7 (2.5)	0.3 (0.4)	0.2 (0.2)
Basal FSH, IU/L	3.0 (5.7)	0.3 (0.2)	4.2 (2.0)	1.6 (2.1)	2.4 (0.8)
*Etiology	Idiopathic (7), Hypothalamic hamartoma (3), Hydrocephalus (3), Megacysterna magna (1), Brain tumor (1)	Adrenal tumor (1), CAH (2), Hypo-thyroidism (1)	Idiopathic (12), Hypothalamic hamartoma (1), Hydrocephalus (2), Radiation-induced (2), Brain tumor (2)	CAH (4), Ovarian cyst (2), Hypothyroidism (2), McCune-Albright syndrome (1), Adrenal tumor (1)	Isolated thelarche (4), Isolated pubarche (3)

All values in mean (SD); BA: bone age; CAH: Congenital adrenal hyperplasia; FSH: follicle stimulating hormones; LH: leutinizing hormone; \*number of cases in parenthesis.

**DEVI DAYAL<sup>1</sup>, JAIVINDER YADAV<sup>1\*</sup>,  
KEERTHIVASAN SEETHARAMAN<sup>1</sup>,  
ANSHITA AGGARWAL<sup>2</sup> AND RAKESH KUMAR<sup>1</sup>**  
Departments of <sup>1</sup>Pediatrics and <sup>2</sup>Endocrinology,  
PGIMER, Chandigarh, India.  
\*jai1984yadav@gmail.com

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## Nutritional Rickets with Severe Complications in Syrian and Iraqi Refugee Children

We investigated the presence of nutritional rickets in Syrian and Iraqi refugee infants who presented to hospital in Turkey in 2017. 25(OH)D levels were examined in 77 refugee children. Nutritional rickets was diagnosed in 22 (28.5%) children; 11 patients with rickets did not follow up.

**Keywords:** Management, Prevalence, Vitamin D.

The civil war in Syria in recent years has caused an enormous refugee crisis [1]. Nearly 4 million people have entered Turkey. Over 90% of whom are Syrian refugees. There are 142 thousand Iraqi refugees in Turkey [2]. In our country, routine use of a daily 400 IU vitamin D supplement is recommended for infants. Vitamin D has been provided free of charge to all infants during their first year since 2005 [3]. Syrians and Iraqi refugees benefit from health services free of charge if they register. This study aimed to investigate the presence of nutritional rickets in Syrian and Iraqi refugee infants who presented to our hospital.

In this study, results of 25(OH)D vitamin levels assessment were extracted from records of Syrian and Iraqi refugee children aged from 1 to 24 months who presented to our hospital in 2017. 25(OH)D levels were examined in 77 children (54 Syrian and 23 Iraqi) for various reasons. Vitamin levels of 25(OH)D were classified as <12 ng/mL, deficiency; 12-20 ng/mL, insufficiency; and >20 ng/mL, normal [4]. Serum calcium, phosphorus, alkaline phosphatase (ALP), parathyroid hormone (PTH) of all patients were evaluated. Nutritional rickets was diagnosed with inadequate vitamin D and/or calcium levels with elevated ALP and PTH, and radiological findings of rickets [5]. Postero-anterior radiographs of left wrist or knee were done. Widening, fraying and cupping of the distal radial, ulnar and femur metaphyses were considered compatible with the radiographic findings of rickets. The demographic and laboratory findings of these children are given in **Table I**. The present study was approved by the Ethics Committee of our institution.

Nutritional rickets was diagnosed in 22 of these children. Consanguineous marriages rate was 59% in families of children with rickets. However, vitamin D-dependent rickets type 1 or type 2 were not diagnosed in these patients. Rickets secondary to vitamin D deficiency was diagnosed in 21 patients. Calcipenic rickets was determined in one patient and his 25(OH)D, 1,25(OH)<sub>2</sub>D, calcium, phosphorus, ALP, PTH, albumin and magnesium levels were 29 ng/mL, 55.9 (25.1-153.8) pg/mL, 6.4 mg/dL, 3.9 mg/dL, 1204 IU/L, 721 pg/mL, 4.8 g/dL and 0.82 (0.70-0.86) mmol/L, respectively. The patient's clinical and laboratory findings of rickets recovered with calcium supplementation without

1,25(OH)<sub>2</sub> vitamin D supplementation. Progressive familial intrahepatic cholestasis-2 (PFIC-2) was detected as a risk factor in only one patient with rickets. In other patients, there was no chronic disease that would constitute a risk for rickets.

Infectious diseases were found in nine patients with rickets, and one child was diagnosed with type 1 diabetes mellitus. Dilated cardiomyopathy secondary to rickets was detected in one patient. The cardiac function had improved five months after treatment. Guillain-Barre syndrome was diagnosed in one patient on evaluation of recent-onset quadriparesis. Her calcium and potassium levels were normal.

After the diagnosis of nutritional rickets, a daily oral 2000-5000 IU vitamin D treatment was started in 20 patients [6]. Stoss therapy was implemented at a dose of 150,000 IU orally in two patients. One of them had dilated cardiomyopathy with severe findings and another one had problem with compliance with the daily regimen.

Rickets treatment was completed in 11 patients. Other 11 patients with rickets did not follow up. 10 patients who completed rickets therapy had normal calcium, phosphorus, alkaline phosphatase, parathormone and vitamin D levels after treatment. Alkaline phosphatase level of PFIC-2 patient regressed to 607 IU/L but did not normalize.

Vitamin D plays an important role in cellular and humoral immunity [7]. In the present study, 41% of patients with rickets had concomitant infectious diseases of which, and nearly 80% had lower respiratory tract infection. Several studies have revealed an association between vitamin D deficiency and the development of autoimmune disorders, including multiple sclerosis, Guillaine Barre syndrome, type-1 diabetes mellitus [8-10]. However, there is no conclusive evidence that low vitamin D levels are causally associated with autoimmune diseases.

Thirteen refugee children with rickets were hospitalized and 12 of them were younger than one year. The most common complaint in children aged 1-2 years was genu varum. These findings may suggest that rickets may be the cause of these clinical illness or may worsen the clinical findings in these children. Increased sun exposure and intake of vitamin D fortified foods and calcium-rich foods such as milk and dairy products should be encouraged to prevent rickets in refugee children.

In conclusion, most of the patients with rickets had presented to hospital with severe clinical findings or deformity. These results seem to be only the tip of iceberg

**TABLE I** CLINICAL AND BIOCHEMICAL FINDINGS IN SYRIAN AND IRAQI REFUGEE CHILDREN (*N*=77)

Parameters	Syrian ( <i>n</i> =54)	Iraqi ( <i>n</i> =23)
Age	11.6 (6.9) [1-24]	12 (5.9)[2-23]
Males	32	10
25(OH)D (ng/mL)	28 (24) [2-119]	20 (22) [3-91]
*Vitamin D levels		
<12 ng/mL	18 (33)	13 (56.5)
12-20 ng/mL	9 (17)	3 (13.0)
>20 ng/mL	27 (50)	7 (30.4)
Calcium, mg/dL	9.5 (0.9) [6.4-10.9]	9.1 (1.3) [5.4-10.7]
Phosphorus, mg/dL	5.0 (1.0) [1.7-6.7]	4.4 (1.2) [2.2-6.6]
ALP	392 (346) [59-1955]	371 (298) [73-1014]
*Nutritional rickets	14 (25.9)	8 (34.8)

All values in mean (SD) and [range] except \*n (%); ALP: alkaline phosphatase.

concerning vitamin D in refugee children. Moreover, stoss therapy might be considered in refugee children with rickets due to the problem about adherence to a daily regimen.

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**ESMA ALTINEL ACOGLU\***, **HUSNIYE YUCEL**,  
**EMINE POLAT AND SALIHA SENEL**

*Department of Pediatrics, Dr. Sami Ulus Maternity and Children's Health and Diseases Training and Research Hospital, Ankara, Turkey.*

*\*esmaaltinel@hotmail.com*

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## Conveyor Belt Entrapment Trauma in Children: An Unreported Menace

A retrospective study was conducted including all the children who sustained motorized machine belt entrapment injuries. Six children included in study had mean (SD) Glasgow coma scale and pediatric trauma score of 5.7 (3.54) and 3.2 (1.21), respectively. Overall mortality and paraplegia rate were 33.3% each. Awareness and legislation both are important to curb this menace.

**Keywords:** *Belt entrapment, Head injury, Pediatric trauma, Thoracic trauma, Vertebral injury.*

Trauma is one of the most important causes of mortality and morbidity in children [1]. The injuries associated with the use of motorized machines is extremely common due to the lack of safety norms and their poor implementation [2]. The locally made machines with open conveyor belts

are being frequently used in the villages. In recent years, we have been witnessing an emerging mode of trauma in children with extremely high case fatality rate and very high morbidity in children who are surviving. We present our experience of managing children with these injuries.

A retrospective review was conducted of the medical records at a level two trauma center of Northern India between May 2015 to April 2019. Clearance was taken from institutional ethics committee. The study included all the children presenting to our trauma center during the study period with a common mode of injury *i.e.* trauma due to entrapment in the open belt of motorized machine. All these children had sustained polytrauma. We classified these children into three groups having different spectrum of injury due to entrapment of different body parts: *viz*, Type I: Children pulled through their torso and had a blow to their head or face from the metallic wheel at the end of the belt; Type II: Children pulled through their torso with torso getting entrapped