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## LETTER TO EDITOR (VIEWER'S CHOICE)

### MULTIPLE FRACTURES IN A CHILD WITH RICKETS

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A 23 month old girl born by non consanguineous marriage presented with fracture of right femur following fall from a chair. Mother gave history of delayed motor development in the form of inability to walk without support. Other milestones were normal. The child was exclusively breast fed till date. The nutritional history revealed deficient calorie and protein intake by about 30%. There was no history of polyuria. On examination, weight was 8kgs and height was 78cms (both < 3rd centile). Blood pressure was 76/50mm of mercury. There was widening of wrists, Harrison's sulcus, rachitic rosary with fracture of right humerus, right clavicle. She had 16 primary teeth. Systemic examination was normal. Investigation revealed serum sodium of 135meq/l, serum potassium of 3.9meq/l, serum chloride of 105meq/l, ionic calcium of 3.1mg/dl (Normal 4-4.5 mg/dl) and serum phosphorus of 3.9 mg/dl (Normal 3.5-4 mg/dl) with AST 30IU/L, ALT 24IU/L and alkaline phosphatase of 980IU/L (Normal = 450-550IU/L). Serum creatinine and blood gases were normal. Radiograph of right wrist revealed splaying of the metaphyseal ends of both the radius and the ulna, with widening of metaphyses. The chest radiograph showed clubbing of the anterior ends of the ribs. Radiograph of limbs revealed transverse fracture of shaft of right femur. Generalized osteopenia was noticed in all long bones. 25 hydroxy vitamin D levels were not done as the patient could not afford the same. The child was administered a mega dose of Vitamin D. Repeat X-ray after 3weeks showed evidence of improvement at metaphyses of growing bones in form of appearance of white line of calcification. Ionic calcium improved to 4.1mg/dl and serum phosphorus remained 3.9 mg/dl and alkaline phosphatase decreased to 650IU/L. This child was put on calcium supplements and is under follow up.

Rickets is an entity in which mineralization is decreased at the level of the growth plates, resulting in growth retardation and delayed skeletal development [1]. It is a disease of growing bone that is unique to children and adolescents which is caused by a failure of osteoid to calcify in a growing person [2]. Failure of osteoid to calcify in adults is called osteomalacia.

Although this problem was largely corrected though health measures that provides children with adequate Vitamin D, rickets remains a major problem in developing countries with a prevalence rate of 10% [3]. UNICEF has estimated that up to 25% of children in China have some evidence of rickets [4]. Indian studies uniformly point to low 25(OH) Vitamin D levels in the population studies with very low vitamin D status of children in both urban and rural population studied [5]. In literature most of the cases reported with rickets present with green stick fractures which are commonly seen in weight bearing bones [6]. Rachitic bone presents a thin, but still lime-containing cortex which is surrounded by a more or less dense lime less layer of so-called osteoid tissue which sufficiently explains the fact that the most frequent and practically the only possible injury, according to the view of most authors, is a green-stick fracture. In the rachitic green-stick fracture, the concave wall of the shaft of the bone breaks, being exposed to the greater strain, while the opposing one may be stretched as far as it can stand the strain. When callus formation follows it forms only at the point of the infraction, that is, on the concave wall, and may attain so great a strength that the angular deformity may become bridged over.

Our patient however presented with multiple fractures even in non weight bearing areas including clavicle and humerus. Similar findings were noted in the study where 17.5% fractures were present in mobile infant and toddlers with rickets [7]. Our case report highlights an unusual presentation of rickets with multiple fractures.

**Conflict of interest:** None

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