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Original Research Article

Mode of presentation of symptomatic vitamin D deficiency in tertiary care centre in Jharkhand, India

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ABSTRACT

Background: Vitamin D deficiency rickets is easily treated, once it is recognized however it has significant potential for morbidity and mortality including failure to thrive, seizure, increased susceptibility to infection and potential for chronic problem with growth and skeletal changes. Mode of presentation and chief complaint is quite variable in vitamin D deficiency.
Methods: The present study was done to know the incidence and mode of presentation of symptomatic vitamin D deficiency. The subject of the study was selected from children less than five year of age with various presentations of symptomatic vitamin D deficiency and final diagnosis of rickets by biochemical finding (alkaline phosphatase high and serum phosphate low) and long bone x ray changes such as cupping, splaying and fraying of the metaphysis.
Results: Thus most common presenting feature was bowed legs (34.5%) followed by delayed motor development (20.7%), failure to thrive (13.8%) and chest infection (10.3%). Two babies presented with hypocalcaemia seizure in the neonatal period. Both babies were breast feed. Bone pain as mode of presentation was also seen in two children. Incidental finding of rickets was present in two children.
Conclusions: Thus our study highlights that symptomatic vitamin D deficiency can present in many ways and we should be aware of it so as to treat it early and effectively. There should be effort to prevent this condition by educating the parents the importance of giving child vitamin D enriched food and sunlight exposure.

Keywords: Presentation, Symptomatic, Vitamin D deficiency

INTRODUCTION

Vitamin D deficiency rickets is easily treated, once it is recognized however it has significant potential for morbidity and mortality including failure to thrive, seizure, increased susceptibility to infection and potential for chronic problem with growth and skeletal changes.[1] Mode of presentation and chief complaint is quite variable in vitamin D deficiency. Prevalence of rickets is high in developing countries compared to developed countries. Prevalence is also high in some particular ethnic groups.[2]

METHODS

This study was done in Rajendra Institute of Medical Sciences (RIMS), Ranchi during the period October 2014 to September 2015. The subject of the study was selected from children less than five year of age with various presentations of symptomatic vitamin D deficiency and final diagnosis of rickets by biochemical finding (alkaline phosphatase high and serum phosphate low) and long bone x ray changes such as cupping, splaying and fraying of the metaphysis. Exclusion criteria were vitamin D refractory and dependent rickets.

RESULTS

Over one year period 29 children (16 male and 13 female) less than five years were identified with biochemical and radiological evidence consistent with vitamin D deficiency. The median age of presentation was 17.6 months. There were four main mode of presentation (Table 1 and Figure 1). Ten children presented with bowed legs at mean age of 17.6 months (range 9 to 25 months). Six children presented with gross motor delay at mean age of 17.7 months (range 13 to 26 months). The four children presenting with failure to thrive did so before the age of 2 years. Three children presented with chest infection, a rarer, but recognized mode of presentation. Thus most common presenting feature was bowed legs (34.5%) followed by delayed motor development (20.7%), failure to thrive (13.8%) and chest infection (10.3%). Two babies presented with hypocalcaemia seizure in the neonatal period. Both babies were breast feed. Bone pain as mode of presentation was also seen in two children. Incidental finding of rickets was present in two children.

Table 1: Clinical characteristics at presentation (n = 29).

Mode of presentation	No	%
Bowed legs	10	34.5
Delayed motor development	6	20.7
Failure to thrive	4	13.8
Chest infection	3	10.3
Hypocalcaemic seizure	2	6.9
Incidental finding	2	6.9
Bone pain	2	6.9

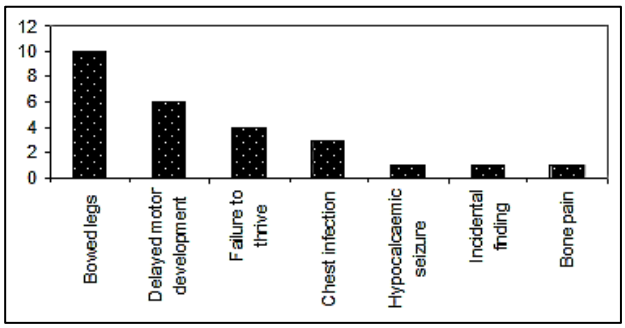

Figure 1: Different mode of presentation.

DISCUSSION

Our study highlights that symptomatic vitamin D deficiency is common in children of Jharkhand. Prevalence is also related to ethnicity.[2] This is more so related to other countries. Male predominance seen in study has no clear reasons. Majority presented with bow legs as toddlers. Long bones of legs gets deformed when the child start bearing weight.[3] This finding is consistent with finding of other authors.[3,4]

Second mode of presentation was with gross motor delay, particularly difficulty in walking. Such children often have significant proximal myopathy.[4] This is also related to limb deformity.[5] Motor delay was found in six children. Four children presented with failure to thrive. Vitamin D deficiency negatively affects growth and is recognized cause of failure to thrive.[5] Children affected by rickets are smaller, both in height and weight, than normal population.[1]

Chest infection as mode of presentation in three cases is due to the fact that chest deformity decreases the lung resilience and predisposes the child to intercurrent infection. More importantly the role of vitamin D in immunity is established fact.[6] Vitamin D deficient child are more prone to infection due to lower immunity.[6]

Two babies presenting with hypocalcaemic seizure with history of breast feeding. Hypocalcaemic seizure as mode of presentation is also reported by many studies.[3,4,7] Hypocalcaemia is known manifestation of vitamin D deficiency and can present in many ways.[8,9] This suggests that vitamin D content of breast milk is inadequate due to impact of maternal vitamin D deficiency during pregnancy.[10,11] Due to this important factor, present recommendation is to give vitamin D supplementation to all babies in infantile period irrespective of mode of feeding.[12] Bone pain as mode of presentation is found in two children. This is common mode of presentation in adult and adolescent but not in children.[13]

Thus our study highlights that symptomatic vitamin D deficiency can present in many ways and we should be aware of it so as to treat it early and effectively. There should be effort to prevent this condition by educating the parents the importance of giving child vitamin D enriched food and sunlight exposure. All babies although breast feed should be given vitamin D supplementation as it is present in inadequate amount in breast milk.[11]

CONCLUSION

Thus our study highlights that symptomatic vitamin D deficiency can present in many ways and we should be aware of it so as to treat it early and effectively. There should be effort to prevent this condition by educating the parents the importance of giving child vitamin D enriched food and sunlight exposure.

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