Philippine Children's Medical Center

A SYSTEMATIC REVIEW ON THE OPTIMAL CHOLECALCIFEROL DOSING REGIMEN IN CHILDREN WITH CHRONIC KIDNEY DISEASE

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INTRODUCTION

Decrease amounts of Vitamin D are associated with CKD and can impact bone growth and cardiovascular outcomes. While cholecalciferol supplementation has its benefits, CKD patients are at risk for toxicities due to altered pharmacokinetic response. Thus, it is important to establish a clinically and scientifically-proven treatment regimen and Vitamin D dosing supplementation for children with CKD.

METHODOLOGY

This is a systematic review study which included human children with chronic kidney disease stages 2–5 with serum 25OHD concentrations <30 ng/mL who had any cholecalciferol dosing regimen. Levels of vit D and iPTH on different dosing regimens of cholecalciferol were compared.

RESULTS

Two trials support the use of 4,000 IU of daily vitamin D_3 orally as it significantly improves 25OHD levels compared to doses 1,000 IU and below. Another trial also supports the use of moderate dosing (3,000 IU of daily vitamin D_3 orally) and observed no significant difference with 25,000 IU of weekly vitamin D_3 orally and 100,000 IU monthly vitamin D_3 orally. One single-arm study suggested the potential effectiveness of 300,000 IU of single-dose vitamin D_3 given intramuscularly while another single-arm study suggested the use of 100,000 IU intermittently given oral vitamin D_3. Three studies reported no incidence of toxicities while two reported less than 10% of cases developing non-serious toxicities.

CONCLUSION

This systematic review suggests an oral supplementation of at least 3,000 IU of cholecalciferol daily, with the exact dose determined by baseline 25OHD levels and body weight among children with CKD. The rates of toxicity reported in the studies included were also observed to be low.

Keywords: chronic kidney disease, cholecalciferol, 25OHD, iPTH