Vitamin D Levels and Bone Density in Children with IBD: Experience of a Pediatric Digestive Disease Center in Northern Virginia

Vahe Badalyan, MD, Stacie Townsend, RD, Samantha Fish, MD and Ian Leibowitz, MD. Pediatrics, Inova Fairfax Hospital for Children.

Background: Children with inflammatory bowel disease (IBD) have lower levels of Vitamin D than their healthy peers. Because Vitamin D is essential for bone mineralization, its deficiency may result in lower bone density. IBD children may need regular measurements of their Vitamin D levels and bone densities so that their intake of Vitamin D and bone health can be optimized. However, currently no guidelines exist on frequency of such monitoring or optimal doses of Vitamin D supplementation.

Objective: This is a cross-sectional study of Vitamin D levels and bone density of children with IBD seen at a pediatric digestive disease center in Northern Virginia.

Design/Methods: Charts and electronic medical records of 254 children seen at our center between 2006 and 2010 were reviewed.

Results: Data on Vitamin D levels were available on 215 children. Vitamin D levels were categorized into three groups: serum levels <20 ng/ml = deficiency, 20-30 ng/ml = insufficiency, and >30 ng/ml = normal levels. The average serum Vitamin D level was 26 ng/ml, with standard deviation of 10.7 ng/ml. 56 children were Vitamin D deficient (mean Vit D level = 14.17, CI 12.92-15.43), 97 had Vitamin D insufficiency (mean Vit D level = 24.66, CI 24.02-25.31), and 62 had normal Vitamin D levels (mean Vit D level = 39.32, CI 37.41-41.24).

Data on bone density using dual X-ray absorptiometry (DXA) technique was available on 126 children. DXA results were categorized into the following groups: lowest z- or t-score <-2.5 = osteoporosis, score from -2.5 to <-1 = osteopenia, score from -1 to 1 = normal bone density, score >1 = high bone density. The average DXA z- or t-score was -1.2 standard deviations below the mean for age. Using the above-defined criteria, a total of 14 children had osteoporosis, 52 had osteopenia, 57 had normal bone density and 3 had high bone density.

There appeared to be significant correlation between Vitamin D levels and DXA results (Pearson correlation -0.23, p = 0.014).

Conclusions: A significant proportion of children with IBD had low Vitamin D levels and bone densities. Periodic monitoring of levels and supplementation of calcium and vitamin D is needed to ensure good bone health.