GROSS MOTOR DELAY IN A TODDLER FOLLOWING VEGAN DIET: CASE OF SEVERE VITAMIN D DEFICIENCY

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Background: The true prevalence for Vitamin D deficiency rickets in North America is unknown, given that recent publications are largely case reports or case series. Patients with rickets may have no presenting symptoms or can present with varying degrees of irritability and bone pain, gross motor developmental delay, long bone bowing, and poor appetite and weight gain.

Materials/Methods: 23 month old unimmunized male who presented with a three day history of fever, tachypnea, and worsening irritability, found to be hypocalcemic to 4.0 mg/dL, with Vitamin D deficiency [25-OH Vitamin D level 8.0 ng/mL levels >20 ng/mL considered adequate], and appropriate PTH elevation to 162.5 pg/mL. Patient was breastfed and following vegan diet, along with parents. Patient noted to be gross motor delayed [not yet walking] with short stature [length Z score -4.02] and lack of primary teeth eruption. Admission exam notable for frontal bossing, bowing of legs, and widened wrists. EKG revealed prolonged QTC interval.

Results: Patient required calcium continuous intravenous infusion in addition to oral supplementation of both calcium and vitamin D. QTC interval normalized with improved calcium level. Genetic skeletal survey revealed diffuse metaphyseal cupping, irregularity, and widening involving long bones at ankles, knees, and wrists with mild diffuse osteopenia, consistent with rickets. Patient was discharged home on ~160 mg/kg/day of elemental calcium, as well as Vitamin D3 weekly for 6 weeks. At follow up visit 2 weeks after admission, patient was walking with overall improved activity. After total Vitamin D supplementation of 300,000 units, patient transitioned to 1000 IU D2 daily, given vegan diet.

Conclusions: Pediatricians should consider Vitamin D deficiency in patients with gross motor delay, particularly in those following low-vitamin D diets, such as veganism. In patients following vegan diets, supplement with Vitamin D2, as it is plant derived [UVB radiated fungi] as opposed to Vitamin D3 [UVB radiated sheep skin lanolin].