

487. Does Serum Vitamin D Concentration Attenuate the Severity of Acute Respiratory Infection? Observations From a Multisite, Longitudinal Study of Adults With Influenza-Like Illness

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Background. Vitamin D plays a key role in immunity. However, studies of vitamin D impact on severity of viral infections have had mixed results. In a study of adults with influenza-like illness (ILI), we evaluated the association between Vitamin D concentration and symptom severity.

Methods. Otherwise healthy adults presenting within 72h of symptom onset were enrolled in a multi-site, longitudinal study of ILI. Nasopharyngeal swabs were obtained

on days 0, 3, 7 and 28 and evaluated for viral etiology by PCR. Demographics and symptom severity were collected at baseline, and subjects recorded symptom severity via diary for an additional seven days. Severity scores were calculated for lower respiratory, GI, composite and systemic symptoms. 25-OH Vitamin D concentrations were measured from acute serum samples and categorized as sufficient (≥ 30 ng/mL), insufficient (15-29 ng/mL) or deficient (< 15 ng/mL).

Results. 682 adults (median age: 29 years) from five hospitals were enrolled. Of these, 529 (77.6%) had vitamin D concentrations < 30 ng/mL, including 133 (19.5%) who were vitamin D deficient. Mean vitamin D concentrations were lower for men, non-Caucasians, and obese patients (each $p < 0.001$). No clinically relevant differences in severity were observed among the three groups. Due to the variation in vitamin D levels between demographics and because females reported higher levels of symptoms, subgroup analyses by sex and weight were performed. These did reveal increased symptom severity among patients with concentrations < 30 ng/mL. Among hospitalized subjects, there was also a trend for longer duration of hospitalization, greater oxygen use, and more prolonged viral shedding among patients with concentrations < 30 ng/mL. There was no association between vitamin D concentration and symptom severity when stratified by viral etiology.

Conclusion. The prevalence of vitamin D insufficiency/deficiency among adults with ILI was very high in our geographically dispersed network. Overall, lower concentrations of Vitamin D did not correlate with greater symptom severity of ILI. However, when controlling for sex and weight, symptom severity was inversely correlated with vitamin D concentration. Vitamin D supplementation during ILI may reduce symptom severity.

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