

Vitamin D deficiency and tuberculosis: what about body mass index?

Eduardo Hernández-Garduño

Research Unit, State Oncology Centre, Social Security Institute of the State of Mexico and Municipalities (ISSEMyM), Toluca, State of Mexico, Mexico

Dear editor

Huang et al conducted a meta-analysis of published studies on various aspects of association between vitamin D and tuberculosis (TB).¹ The study concluded that vitamin D deficiency (VDD) was associated with higher risk of TB. However, low body mass index (BMI), a well-recognized and a stronger risk factor of TB than VDD, was not mentioned in this review nor was it accounted for in the multivariable analysis in the majority of case-control studies included in the meta-analysis exploring the association between TB and VDD. Vitamin D levels are likely to be positively correlated with weight/BMI. Infected people who are underweight by $\geq 15\%$, 10%–14% and 5%–9% are at increased risk of progression to TB disease with 2.6, 2.0 and 2.2 cases per 1,000 person-year, respectively.² Contradictory results were found in the few studies of this meta-analysis¹ that considered weight/BMI in the multivariable analysis. One study showed a weak association between VDD and TB (odds ratio: 1.07, 95% confidence interval 1.01–8.52) but only in men.³ Another study found no such association.⁴

Protein-calorie malnutrition is recognized as a well-established risk factor of TB disease, if not the strongest.⁵ Some studies in the meta-analysis¹ consistently showed that TB patients have lower weight/BMI as compared to controls and therefore this should always be considered in the multivariable analysis assessing nutritional risk factors of TB. Besides low levels of vitamin D, underweight TB patients likely have low levels of other vitamins, calcium, albumin, ferritin or cholesterol (to mention a few) as shown by some studies included in Huang et al meta-analysis.¹

Future studies focusing on nutritional deficiency risk factors for TB should consider all of these factors together and/or independently as playing a role.

Disclosure

The author reports no conflicts of interest in this communication.

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Correspondence: Eduardo Hernández-Garduño
Unidad de Investigación Básica Aplicada (UIBA) Centro Oncológico Estatal (COE), Instituto de Seguridad Social del Estado de México y Municipios (ISSEMYM), Avenida Solidaridad las Torres #101, Colonia del Parque, Toluca, Estado de México, CP 50180, México
Tel +52 1 722 276 6820 ext 2934
Email epidemiologist.researcher@gmail.com

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