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Role of vitamin D deficiency in susceptibility to tuberculosis and treatment response

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Vitamin D, a fat soluble vitamin, is well known for calcium homeostasis. Deficiency of vitamin D is not only linked with rickets or osteomalacia but with many other infectious and metabolic disorders. Emerging evidences suggest the relation of vitamin D deficiency in tuberculosis. The objectives of this study were to investigate the association of vitamin D deficiency with tuberculosis and to see its impact on anti-tuberculous response. We recruited 260 TB patients from Gulab Devi Chest Hospital, Lahore who had yet not started anti TB treatment for this admission. Any patient with co morbidity or age above 60 years was excluded. Serum 25(OH) D was measured in TB cases, contacts of TB patients and controls from general population. Baseline vitamin D status was significantly associated with TB ($P<0.01$). Mean vitamin D level in TB patients was 23 nmol per L which is much lower than TB contacts and controls from general population. Sputum smear sample for the presence of acid fast bacilli was examined after every two weeks for all included cases, till sputum converted negative for AFB. Survival analysis indicates that patients with deficiency of vitamin D required more time to sputum smear conversion (median days 22.5, IQR 22.5-37.5). And this association of vitamin D with response to anti-tuberculous treatment was genotype independent. Allelic discrimination assay for VDR, CYP2R1 and VDB indicate none of these SNPs are associated with vitamin D deficiency and not with incidence of tuberculosis. High prevalence of vitamin D deficiency in pulmonary TB patients indicates that vitamin D is a risk factor for the development of active tuberculosis. Furthermore, its impact in response to anti-tuberculous treatment also explains its significant role in the management of tuberculosis. As early sputum smear conversion can break the chain of infection and further spread of tuberculosis. Therefore, maintaining vitamin D status in TB patients might be helpful to control tuberculosis.

Biography

Kashaf Junaid has completed her PhD from the Department of Microbiology and Molecular Genetics, University of The Punjab, Pakistan. She also did research work in Bart's Institute of Primary Health Care, Queens Mary University of London. She is working as an Assistant Professor in The University of Lahore, Pakistan.

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