SERUM VITAMIN D LEVEL AMONG NEWLY DIAGNOSED TUBERCULOSIS PATIENTS AND THEIR HOUSEHOLD CONTACTS

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Background

Recently vitamin D has been found to have a major role in fighting against tuberculosis. Even though individuals living in Ethiopia have a high exposure to sunlight which is a source of vitamin D, tuberculosis is still one of the major causes of morbidity and mortality in the country. Therefore, this study aimed to determine the level and associated factors of vitamin D deficiency in newly diagnosed tuberculosis patients, household contacts and community controls in Gondar, Ethiopia.

Methods

A comparative cross-sectional study design was conducted. Blood samples were collected from newly diagnosed smear positive pulmonary TB patients, their household contacts and community controls. Serum 25(OH)-vitamin D_3 was determined by an Enzyme Linked Immunosorbent Assay. A serum level of 25(OH)-vitamin D_3 below < 50nmol/L was defined as vitamin D deficiency and <25 nmol/L as severe vitamin D deficiency.

Results

A total of 126 newly diagnosed smear positive TB patients, 57 house hold contacts and 70 apparently community controls were included in the study. The mean±SD age (years) of TB patients, house hold contacts and community controls was 29.8±11.9, 24.3± 14.7 and 27.3±7.6 respectively. Ninety out of 126 (71.4%) TB patients were underweight with a BMI of < 18.5 kg/m^2. The mean 25(OH)-vitamin D_3 level of TB patients (30.1±19.3 nmol/L) was significantly lower than community controls (38.5±20.9nmol/L, P= 0.005 and household contacts (37.7±12.8 nmol/L, P =0.031).). The prevalence of vitamin D deficiency was higher in TB patients (83.3 %) than in community controls (67.1%, P= 0.009). The prevalence of vitamin D deficiency was also found higher in household contacts (80.7%). Severe vitamin D deficiency was observed in 53 %(67/126), 30% (21/70), 19.3 %(11/57) of TB patients, community controls and household contacts respectively. Low BMI (AOR=2.13; 95%CI: 1.02, 3.28) and being positive for tuberculosis (AOR=1.93; 95%CI: 1.06, 2.86) were significant predictors of severe vitamin D deficiency.

Conclusion

High prevalence of vitamin D deficiency was found among newly diagnosed TB patients and in their household contacts. The present study warrants further studies to determine the role of vitamin D supplementation in the prevention and treatment of tuberculosis in Ethiopia.

KEY WORDS: Vitamin D deficiency, Tuberculosis, Ethiopia.