

## Serum Zinc Level in Patients with Multidrug Resistant Tuberculosis

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**Abstract :** Background: Zinc, one of the vital micronutrients, has an incredible role in the immune system. Hypozincemia affects host defense by reducing the number of circulating T cells and phagocytosis activity of other cells which ultimately impair cell-mediated immunity 1, 2. The immune system is detrimentally suppressed in multidrug-resistant tuberculosis (MDR-TB) 3, 4, a major threat of TB control worldwide5. As zinc deficiency causes immune suppression, we assume that it might have a role in the development of MDR-TB. Objectives: To estimate the serum zinc level in newly diagnosed multidrug resistant tuberculosis (MDR-TB) in comparison with that of newly diagnosed pulmonary TB (NdPTB) and healthy individuals. Materials and Methods: This study was carried out in the department of Public Health and Informatics, Bangabandhu Sheikh Mujib Medical University, Dhaka in collaboration with National Institute of Diseases of the Chest Hospital (NIDCH), Bangladesh from March' 2012 to February 2013. A total of 337 respondents, of them 107 were MDR TB patients enrolled from NIDCH, 69 were NdPTB and 161 were healthy adults. All NdPTB patients and healthy adults were randomly selected from Sirajdikhan subdistrict of Munshiganj District. It is a rural community 22 kilometer south from capital city Dhaka. Serum zinc level was estimated by atomic absorption spectrophotometry method from early morning fasting blood sample. The evaluation of serum zinc level was done according to normal range from 70 to120  $\mu\text{gm/dL}$ 6. Results: Males were predominant in study groups ( $p>0.05$ ). Mean (sd) serum zinc levels in MDR-TB, NdPTB and healthy adult group were 65.14 (12.52), 75.22(15.89), and 87.98 (21.80)  $\mu\text{gm/dL}$  respectively and differences were statistically significant ( $F=52.08$ ,  $P$  value $<0.001$ ). After multiple comparison test (Bonferroni test) significantly lower level of serum zinc was found in MDRTB group than NdPTB and healthy adults ( $p<.001$ ). Point biserial correlation showed a negative association of having MDR TB and serum zinc level ( $r= -.578$ ;  $p$  value  $<0.001$ ). Conclusion: The significant low level of serum zinc in MDR-TB patients suggested impaired immune status. We recommended for further exploration of low level of serum zinc as risk factor of MDR TB.

**Keywords :** Bangladesh, immune status, multidrug-resistant tuberculosis, serum zinc

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