ROLE OF COMBINED ZINC, VITAMIN A, AND FISH OIL SUPPLEMENTATION IN CHILDHOOD TUBERCULOSIS

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Abstract. This objective of this study was to determine benefit of one month combined supplementation (zinc, vitamin A, fish oil) along with anti-tuberculosis drugs (ATD) on increasing serum leptin levels and decreasing tumor necrosis factor-α (TNF-α) in children with tuberculosis (TB). A quasi experimental study was conducted on 22 children (aged 5-14 years) with a positive acid-fast bacilli (AFB) smear. The children were divided into 2 groups. A history, physical examination, anthropometric measurements, serum leptin levels, TNF-α levels, retinol and zinc levels were examined in all subjects before and after treatment. Nutritional supplementation and ATD were given to group I while ATD only were given to group II. The change in leptin, TNF-α, retinol and zinc levels were analyzed with the Mann-Whitney test, while a *t*-test was used to determine changes in body mass index (BMI). Group I had a higher significant increase in serum leptin levels than group II (p=0.034). Group I had a significantly greater decrease in TNF-a levels than group II (p=0.032). No significant differences in retinol or zinc levels were seen between the two, but both groups had an increase after treatment. Both groups had a significant increase in BMI (p=<0.001) post-treatment compared to pre-treatment. Supplementation with zinc, vitamin A and fish oil is associated with a significant increase in leptin levels and a significant decrease in TNF-α levels among children treated for TB. No significant benefit was seen in BMI among children receiving supplementation compared to those without it, although ATD resulted in a significant increase in BMI in both groups.

Keywords: tuberculosis, zinc, vitamin A, fish oil, leptin, TNER, children

INTRODUCTION

The incidence of childhood tuberculosis (TB) is starting to decline but slowly (less than 1% per year) (Vashishtha, 2009). In 2008, the prevalence of TB in Indonesia was about 229/100,000 population and the mortality was 27/100.000 (Lolekha *et al*, 2008; WHO, 2009); about 10% of the cases were found in children aged <15 years (WHO, 2009). However, the prevalence of childhood TB report may be underestimated (Donald, 2004). Studies of childhood TB are rare.

Malnutrition is common in TB and may contribute to a poorer prognosis; therefore, this also needs appropriate management (Sarraf *et al*, 1997; Zachariah

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