The Effect of Vitamin D as Adjuvant Therapy in Pulmonary Tuberculosis with Moderate-advanced Lesion

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Tuberculosis is a major health problem, with a prediction by the World health organization in 1995 that every year there would be approximately 9 million new cases world-wide. In developing countries, 25% of all deaths is caused by this disease – a cause of death that can be prevented or at least minimized.

Ninety-five percent of all TB cases are found in developing countries, in which 755 fall into the productive-age bracket (15 to 50 years). A Household Survey conducted by the Indonesian Ministry of Health in 1995 revealed TB as the third-ranking cause of death after cardiovascular disease and other respiratory illnesses. In 1999, WHO predicted that in Indonesia there are 583,000 new-tuberculosis cases found and the mortality rate are approximately 140,000 every year. In general, for every 100,000 Indonesians, there are 130 new patients who are positive for acid-fast rods (AFR). Tuberculosis is frequently found in productive-age, poor and low-educated group. Since 1995, the program of pulmonary TB eradication has been established, known as the DOTS strategy (Directly Observed Treatment Short course chemotherapy), recommended by WHO. It is followed by National Comprehensive Act of Tuberculosis Management/GERDUNAS-TB (Gerakan Terpadu Nasional Penanggulangan Tuberkulosis).1

There are three factors which correlate with each other in TB management, i.e. host, agent and drug.2,3 The factor of drug has been extensively promoted by organizing utility for physical examination and distribution of free drugs through the health center or hospital, which has been appointed by the government. The factor of agent has also been managed so that it could be detected the AFR in sputum as soon as possible before the patient undergoes any treatment. Furthermore, in cases where no sputum conversion is achieved after anti-TB treatment, the AFR culture should be done to identify the sensitivity of M.tbc bacteria against the given drugs. If the bacteria are proven resistant, then the treatment should be altered with recently sensitive drugs either the first line drugs or combined with the second line drugs.1,2

The host factor has also been promoted through various studies and programs intended to enhance successful therapy, either by giving information for patient, patient’s family or community figure and by giving additional nutrition at no cost. Until now, there are only a few studies about host correlated to susceptibility of TB infection. The susceptibility of TB infection is correlated with immune factor, especially cellular immune system involving T helper cells, cytokines, and macrophages.2,3 There are several studies about the immune system, i.e. the role of levamisole in the enhancement of T helper cells proliferation, and the role of phyllanthus niruri extract in enhancement of cytokines activity, which is important to eradicate TB bacteria.4,5

Regarding immune system activity, previous studies have demonstrated that vitamin D may increase the activity of macrophage to phagocyte and destruct the TB bacteria.2,3 Based on that result, an advanced study has been conducted about the role of vitamin D in improving recovery of TB patients with standard anti-tuberculosis therapy. In this study, clinical improvement, sputum conversion rate, and radiologic improvement were examined in pulmonary TB patient with moderate advance pulmonary lesion, who has been treated with standard anti-tuberculosis compared to standard anti-tuberculosis plus vitamin D. This study found that supplementary vitamin D could increase the sputum conversion and pulmonary radiologic improvement.
REFERENCES


