Respons imun pada talasemia mayor dan pengaruh suplementasi seng terhadap kualitas respons imun pasca-splenektomi = Immune response of thalassemia major and zinc supplementation effects on immune response quality of post splenectomy thalassaemia major

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Abstrak

Latar Belakang: Respons imun berperan pada kerentanan pasien talasemia terhadap infeksi. Defisiensi seng pada talasemia akan memperburuk respons imun. Penelitian ini bertujuan mengetahui profil respons imun pasien talasemia mayor dan pengaruh suplementasi seng dan imunisasi pneumokokus pada respons imun pasien talasemia pasca-splenektomi.
Metode: Penelitian dilakukan di Pusat Thalassemia RSCM, Jakarta pada September 2013 ? Februari 2014. Studi observasi dengan metode belah lintang komparatif pada talasemia mayor sehat usia > 12 tahun dan HIV negatif non- dan pasca-splenektomi mendahului studi intervensi dengan metode randomized, double-blinded, controlled trial pada talasemia pasca-splenektomi yang dialokasikan menjadi kelompok seng 1,5 mg/kg/hr maksimum 50 mg, atau plasebo. Dua jenis imunisasi pneumokokus diberikan untuk menguji fungsi limfosit T. Luaran yang diukur adalah respons imun non-spesifik (jumlah dan fagositosis neutrofil) dan respons imun spesifik (kuantitatif dan kualitatif). Respons imun spesifik kualitatif mengukur produksi IgG pneumokokus, IL-2 dan TNF- pasca pajanan PHA.
Hasil Penelitian: Median fagositosis neutrofil kelompok pasca-splenektomi 29,79 (4 sampai 81)% dan kelompok non-splenektomi 55,83 (2 sampai 133)% (p < 0,001). Kelompok pasca-splenektomi mempunyai jumlah netrofil, limfosit total, jumlah limfosit T, jumlah limfosit T CD4+ dan CD8+ yang lebih tinggi dibanding kelompok non- splenektomi. Tidak ada perbedaan respons imun spesifik kualitatif yang bermakna di antara pasien talasemia mayor. Setelah intervensi, hanya 18 dari 28 subjek kadar seng serum kelompok seng yang menjadi normal. Walaupun fagositositosis neutrofil hanya berubah dari 31,36 (4 sampai 81)% menjadi 30,44 (3 sampai 72)% (p = 0,554), namun terdapat kecenderungan perbaikan fagositosis neutrofil pada kelompok seng. Parameter respons imun lainnya tidak menunjukkan perubahan antara kelompok seng dan plasebo selama penelitian 12 minggu (p > 0,05).
Simpulan: Terdapat perbedaan respons imun antara pasien talasemia pasca-splenektomi dan non-splenektomi. Belum dapat dibuktikan pengaruh suplementasi seng pada hampir semua parameter respons imun pasien talasemia mayor pasca-splenektomi. Seng mungkin dapat direkomendasikan sebagai suplementasi, tetapi perlu penelitian lanjutan mengenai dosis dan lama pemberian yang tepat untuk perbaikan respons imun pasien talasemia mayor pasca-splenektomi.
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Introduction: Immune response plays a role in increasing thalassemia patient?s susceptibility to infections. Zinc deficiency in thalassemia patients will alter immune response. The aim of this study is to evaluate immune response of thalassemia major and zinc supplementation effects on immune response quality of post-splenectomy thalassemia major.
Methods: This study was conducted at Thalassaemia Centre, Cipto Mangunkusumo Hospital Jakarta on September 2013 ? February 2014. An observational study using comparative cross-sectional method was

done in healthy non- and post-splenectomy thalassemia major aged > 12 year and HIV negative. Then, it was followed by an interventional study using randomized, double-blinded, controlled trial, on post-splenectomy subjects, which were assigned to receive 1.5 mg/kg/d maximum 50 mg/d zinc or placebo. Moreover, 2 type of immunization were also administered in order to assess T lymphocyte function. The outcomes were non-specific (neutrophil count and phagocytosis) and specific immune response (quantitave and qualitative). Qualitative specific immune response measured by detecting IgG pneumococcal, IL-2 and TNF- after PHA exposure.
Results: Median of neutrophil phagocytosis on post-splenectomy and non-splenectomy were 29.79 (4 to 81)% and 55.83 (2 to 133)% ($p < 0.001$). Post-splenectomy subjects have higher neutrophil count, total lymphocyte count, lymphocyte T count, lymphocyte T CD4+ and CD8+ than non-splenectomy. There is no significant difference on qualitative specific immune response among thalassemia major. Following the intervention, only 18 out of 28 subjects of zinc group had normal plasma zinc. There was a trend of neutrophil phagocytosis improvement on zinc group despite a little shifting on those value, from 31.36 (range 4 to 81)% to 30.44 (3 to 72)% ($p = 0.554$). Other immune response parameters showed no different changes between two groups after 12 weeks supplementation ($p > 0.05$).
Conclusions: There were significant differences on immune response of post- splenectomy and non-splenectomy patients. The significant changes on almost all of immune response parameter after zinc supplementation have not been proved yet. Addition of zinc supplementation may be recommended, but it need further study to evaluate the dose and duration of supplementation to improve immune response in splenectomised thalassemia major patients.