The Long-term Efficacy and CBC Parameter Change after Splenectomy in Thalassemia Patients

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Background: Thalassemia disease has abnormal hemoglobin synthesis, which requires abnormal RBC morphology. Whilst, spleen plays a role to remove abnormal RBC, with the use of splenomegaly. In the past, splenectomy was used as the treatment goal to reduce transfusion in thalassemia patients. Now, the trend of splenectomy is controversial because not all thalassemia patients respond to splenectomy. Moreover, there are some concerns of long term complications.

Objective: We aimed to study the long-term efficacy of splenectomy especially packed red cell (PRC) requirement amelioration, factor predicting a response to splenectomy, and CBC parameter changes after splenectomy.

Methods: Transfusion dependent thalassemia (TDT) patients (required PRC transfusion more than 3 units/year), aged more than 15 years, who had splenectomy was recruited from our hematology division data base. Clinical characteristics, including age, sex, age of splenectomy, date of operation, hemoglobin typing, were collected. PRC transfusion requirement (unit/year), and pretransfusion hemoglobin (Hb) level before and post splenectomy were collected. CBC was collected 1 year before operation, as well as 1 year and 5 year post splenectomy. Continuous variables were compared by t-test, Wilcoxon rank-sum test (Mann-Whitney test) and analyzed by repeated measure mixed model. Level of significance was defined as p-value < 0.05.

Results: Fifty TDT patients were included in the study. In term of splenectomy efficacy, 27 patients (54%) and 25 patients (50%) had 30% and 50% reduction, respectively in PRC transfusion after splenectomy. Whereas, 21 patients (42%) were changed from TDT to non-transfusion dependent thalassemia (NTDT). The significant factors associated with changing from TDT to NTDT after splenectomy were hemoglobin typing (P=0.001), and percent of neutrophils (P=0.02). HbH disease and beta thalassemia/HbE patients were those who had higher response (28.6% and 52.4%, respectively) compared to HbH/CS (9.5%) and homozygous beta-thalassemia (9.5%). Lower percentage of neutrophils (<50%) predicted lower response to splenectomy. CBC before splenectomy, 1 and 5 years after splenectomy were compared. Mean Hb level was increased from 6.0 to 8.2 with 7.7 g/dL (P<0.001). Platelet was increased from 234,866 to 714,473 with 675,579 per cu.mm. (P<0.001).

Conclusion: Splenectomy can reduce PRC transfusion in some TDT patients. Factors for the prediction of splenectomy response includes thalassemia type and neutrophil percentage.

Keywords: Transfusion dependent thalassemia, Splenectomy, PRC transfusion, Efficacy, Non-transfusion dependent thalassemia (NTDT)