tissue[20], therefore we may expect an increase in serum zinc from damaged hepatocytes[19].

Pakarek et al hypothesized that variation of serum Zn level may be due to leukocyte endogenous mediator (LEM) which has the property of mobilizing zinc from its stores in liver and other tissue to the serum[21].

The present study found significant low serum Mg in thalassaemia major patients which is similar to other studies[15,16,22]. Magnesium is the second most abundant intracellular metal after potassium and it plays an essential role in the activity of many enzymes involved in cellular metabolism[23]. De-Franceschi L. et al[22] had speculated that the hypomagnesemia in B-thalassaemia may be due to chelation by citrate in chronically transfused patients or could just be a consequence of cellular iron overload[22,23].

Thalassaemia major patients were found to have significant anaemia compared to control, table 2, which was expected since those patients suffer from chronic hemolytic anaemia which is due to ineffective erythropoiesis and the hemolysis of RBC[11,18].

Generally, thalassaemia minor is a milder disease; therefore, the reduction in haemoglobin did not reach the level of significant. On the other hand, PCV was significantly increased in thalassaemia minor because of the increased RBC count usually encountered in thalassaemia minor patients[11,18].

In agreement with previous studies, the MCV, MCH and MCHC were significantly reduced in thalassaemia minor[11,18] who were transfusion independent. While in thalassaemia major, they were significantly increased because all the thalassaemia major patients were transfusion dependant and the transfused RBCs will affect these haematological parameters. Also the increase in MCV may be contributed to folic acid deficiency usually encountered in B- thalassaemia patients as a result of increased cell turnover in the bone marrow[11,17,18].

Additionally, this study had revealed a positive correlation between serum Mg and PCV (r=0.457) in B- thalassaemia major patients (Figure 3), which was in agreement with a study of De-Franceschi L et al[22], who had found that supplement of Mg may improve anaemia and reduce dehydration in B- thalassaemia major rats which was attributed to the effect of Mg on membrane stability by decreasing the activity of the K-Cl contrasport system, thus decrease the abnormal erythrocyte K loss and increase the life span of the RBCs[22].

Many studies had emphasized on the importance of Zn supplementation in the treatment of iron deficiency anaemia particularly in pregnant female[25] and in children[26]. This study revealed a positive correlation between serum Zn, haemoglobin and PCV (r=0.278, r= 0.306 respectively) in B- thalassaemia major patients (figure 4 and figure 5). These results were in agreement with many other studies who found that zinc supplementation in B- thalassaemia major had a positive effect on linear growth and anaemia[25,27].

## References

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