

Effect of Pregnancy on HbA2 Level and its Possible Clinical Relevance for Diagnosis of β -thalassaemia Traits

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Epidemiological studies have identified that 2.2% of the population in Sri Lanka are carriers for β -thalassaemia. Detection of the β -thalassaemia carrier state (BTT) is done using HPLC or CE technology, and a cut-off value of Hb A2 >3.5% is considered to be diagnostic. Hb A2 level which is crucial for the diagnosis of BTT, is however affected by many “unrelated” factors. Iron deficiency anaemia, hyperthyroidism and antiretroviral therapy, are known to affect Hb A2 levels. Whether pregnancy affects Hb A2 level has not been widely described. The current study was designed to determine the effect of pregnancy on Hb A2 level and its possible effects on the accurate diagnosis of BTT in antenatal clinics. This was a case-control study including 120 women in four age-matched groups (30 in each), namely, “BTT pregnant”, “BTT non-pregnant”, “Normal pregnant,” and “Normal non-pregnant”. All pregnant women with and without BTT were recruited from the antenatal clinics at the teaching hospital Kurunegala during the end of the second trimester. Non-pregnant women were recruited from the routine screenings at Ragama and Kurunegala thalassaemia centers. FBC and Capillary Electrophoresis (CE) were performed in all participants, while serum ferritin was determined only when necessary to exclude IDA. Hyperthyroidism was excluded by an interviewer-administered questionnaire. According to the results, there was a statistically significant difference ($P < 0.05$) in Hb A2 level between pregnant (mean; 2.45%) and non-pregnant (mean; 2.26%) women without BTT. Contrarily, there were no significant differences in Hb A2 between BTT pregnant (mean; 4.73%) and BTT non-pregnant (mean; 4.88%) women. In conclusion, there is a tendency for a slight increase in HbA2 level in pregnancy, but its effect on BTT diagnosis at the antenatal clinic is minimal.

Keywords: Beta-thalassaemia trait, Pregnancy, HbA2, Laboratory diagnosis