Study of Clinico-hematological Correlation in Cases of Glucose-6-Phosphate Dehydrogenase Estimation in a Tertiary Care Hospital

Rima N Kamat1, Sangeeta Kini2, Deepa Sharma3, Sushama Chandekar2
1Addtnl. Prof., 2Asst. Prof., 3Ex-Postgraduate, BYL Nair Ch Hospital & TNMC, Mumbai, Maharashtra

Sir,

G6PD deficiency inherited as X linked recessive disorder is a significant health problem with 7.5% of world population having one or two genes for G6PD deficiency. In India with a diverse population, prevalence of G6PD deficiency is 0-10%. G6PD testing is done as a diagnostic test by standard quantitative spectrophotometric assay and qualitative NADPH fluorescence test.

The present study included retrospective and prospective data from Department of pathology over a period of three years from August 2012-2015. Aim was to analyse and highlight the incidence of G6PD deficiency among various age groups of urban population visiting our tertiary care hospital. The study included quantitative estimation of G6PD and correlating with indications and haematological parameters. A total of 2115 blood samples were received during the three years period.

Complete clinical details were obtained from requisition forms or Medical Records. G6PD estimation was done by quantitative method based on Nicotinamide adenine dinucleotide phosphate (NADP) reduction on a semi-automated biochemical analyser of ERBA instruments. The normal reference of G-6-PDH in this study at 30 degree Celsius used was 4.6-13.5 U/g of Hb. Samples were labelled as G6PD normal or deficient. Statistical analysis was carried out using Chi Square test.

Out of a total 2115 samples tested, largest age group was less than 1years (29.9%) followed by 21-30years (24.6%) with male: female being 1.73:1 which was significant (p= 0.04). Ethnicity wise distribution was not significant (p= 0.21). Commonest clinical complaints were fever and chills (50.5%) followed by features of jaundice and lethargy in neonates (29.8%).

Commonest indication for G6PD was malaria (50.5%) followed by neonatal hyperbilirubinemia (29.8%) and dermatological disorders (14.7%). Out of 2115 cases, 62(3.2%) cases were G6PD deficient in 1934 valid samples. There was an increased incidence of males among deficient individuals. Majority of the diagnosed G6PD deficient cases in valid samples had malaria (93.6%) as the commonest indication followed by haemolytic anaemia and hyperbilirubinemia. On correlating with hemogram, statistically significant parameters such as hemoglobin and RBC indices among G6PD deficient individuals were observed.

In the present study, patient’s age variation, male preponderance and major presenting clinical complaints seen was well corroborated with Al Mendalawi et al, Issac et al and Tsegaye et al. About 151 samples (8.6%) showed invalid values due to inadequate volume < 2cc, lipemic samples and clotted samples. In this study, 49 (79%) of 62 G6PD deficient cases were significantly anemic (p value < 0.001) thus implying G6PD deficiency linked to haemolysis which was well corroborated with Al Mendalawi et al.

In our study, low red blood indices and high reticulocyte count (1%-2.5%) were significant in G6PD deficient individuals (p<0.001) which was in concordance with Al Mendalawi et al. In present study, out of 1934 patients, 62 (3.2%) were found to be G6PD deficient unlike Issac et al reported a high 14.4% G6PD deficiency attributing to high prevalence of hemoglobinopathies and malarial parasitemia. The differences in the incidence of G6PD deficiency may be attributed to different genetic types of G6PD. In 3.2% (62cases) of the overall rate of G6PD deficiency, 93.5% cases were due to malarial parasitemia which corroborated with 90.9% observed by Tsegaye et al.

To conclude, the present study highlights mandatory screening for G6PD deficiency detection in treatment of malaria and should be always included in malaria elimination programmes to ensure effective management. Also, G6PD screening should be considered in neonatal hyperbilirubinemia to avoid life threatening complications presenting later on in life.

References