

Association of Glucose-6-Phosphate Dehydrogenase Deficiency (G6PD) with Retinal Vein Occlusion

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Abstract

Background. Glucose-6-phosphate dehydrogenase (G6PD) deficiency is one of the most common enzymopathy disease, with global prevalence approximately 5%, Malaysia is approximately 3.4%. Evidence indicates that G6PD-deficient patients are protected against ischemic heart and cerebrovascular disease. The purpose of this study was to assess the frequency of G6PD deficiency in East Coast of Peninsular Malaysia patients with retinal vein occlusion (RVO) and to ascertain whether the deficiency may offer protection against RVO. **Methods.** Erythrocyte G6PD levels were measured in 234 consecutive RVO patients: 146 with central RVO (CRVO) and 98 with branch RVO (BRVO). Age- and sex-matched subjects ($n = 250$) who were undergoing cataract surgery and had no history of RVO served as the control. Multiple logistic regression models were used to investigate the association between G6PD deficiency and RVO, CRVO, or BRVO. **Findings.** G6PD deficiency was found in 7 (3%) patients with RVO, 10 (4%) with CRVO, 14(6%) with BRVO, and 45 (18%) control subjects. Differences between cases and controls were statistically significant ($P < 0.05$). Multiple conditional logistic regression analysis, including as covariates G6PD deficiency, hypertension, diabetes, and hypercholesterolemia, revealed that G6PD deficiency was significantly associated with lower risk of development of RVO, CRVO, or BRVO. After adjustment for hypertension, diabetes, and hypercholesterolemia, the association between G6PD deficiency and RVO, CRVO, or BRVO remained statistically significant. However, when the patients with CRVO or BRVO were categorized by gender, a significant association was found in female. **Conclusion.** The frequency of G6PD deficiency in patients with RVO was significantly lower than control. This could suggest that G6PD-deficient patients have lower risk of development of RVO.

Keywords: Glucose-6-Phosphate Dehydrogenase Deficiency (G6PD), Retinal Vein Occlusion, central retina vein occlusion (CRVO), branch retinal vein occlusion (BRVO)