

Decreased glucose-6-phosphate dehydrogenase levels in vitiligo patients: Further evidence of oxidative stress

Sir,
Vitiligo is an acquired skin depigmentation disorder affecting 1% of the world population.^[1] Pathogenesis of vitiligo is complex and not yet fully understood. Oxidative stress has been proposed to be one of the major players in the pathogenesis of vitiligo.^[1,2] Glucose-6-phosphate dehydrogenase (G6PD) is one of the main antioxidant enzymes in the body.^[3] The low erythrocyte levels of this enzyme have been shown to be a reliable indicator of oxidative stress.^[3] The aim of this study was to evaluate the role of oxidative stress in the pathogenesis of vitiligo by comparing the erythrocyte levels of G6PD between vitiligo patients and healthy controls.

In this IRB-approved two-group cross-sectional comparative study, 30 patients with vitiligo were enrolled as cases. Of these 30 patients, 25 had generalized and 5 had segmental vitiligo. Exclusion criteria were receiving treatment for vitiligo within the past 3 months before enrollment, history of any other systemic disorder, history of drug or alcohol dependency or cigarette smoking, and use of one of certain specified medications within 1 month before enrollment (corticosteroids, non-steroidal anti-inflammatory drugs, and antioxidant supplements). Thirty age and sex matched healthy subjects were also enrolled as controls.

After giving informed consent, venous blood samples were obtained from all cases and controls. Erythrocyte G6PD levels were measured by Beutler's method.^[4] Statistical analyses were performed using the SPSS base 16. Quantitative data were compared between two groups using Mann-Whitney U Test; categorical data were compared using the chi-square test. $P < 0.05$ was considered to be statistically significant.

Cases and controls were similar in terms of age (39.3 ± 12.8 vs. 39.5 ± 12.3 years, $P = 0.9$) and sex (male/female ratio=1 in both groups, $P = 1.0$). The erythrocyte G6PD levels were significantly lower in vitiligo patients compared to controls (12.5 ± 5.4 U/g Hb vs. 16.6 ± 3.3 U/g Hb, $P = 0.003$). However, erythrocyte G6PD levels were similar between generalized and segmental vitiligo patients (12.8 ± 6.1 U/g Hb vs. 14.4 ± 2.9 U/gr Hb; $P = 0.6$).

Oxidative stress is increasingly considered as one of

the major players in the pathogenesis of vitiligo.^[1,2] Several studies have demonstrated the increased levels of oxidative stress markers like malondialdehyde (MDA) and decreased levels of anti-oxidant factors like superoxide dismutase in vitiligo patients.^[1,4] In two previous studies from India and Turkey, the levels of G6PD, one of the major antioxidant enzymes, have also been shown to be significantly lower in patients with vitiligo compared with healthy controls.^[4,5] Similarly, in our study, the cellular levels of G6PD were significantly lower in vitiligo patients compared with healthy controls. Moreover, in our study, the cellular levels of G6PD were similar between patients with segmental and generalized vitiligo. Similarly, in a study by Akoglu *et al.*,^[6] patients with generalized and segmental vitiligo had similar total oxidant and antioxidant statuses.

In conclusion, the results of our study in accordance with previous studies show that vitiligo patients have lower levels of the antioxidant enzyme, G6PD. Larger studies on vitiligo patients with different demographic backgrounds are needed to further evaluate the role of oxidative stress in the pathogenesis of this enigmatic disorder.

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