



## THE ROLE OF HOMOCYSTEINE, VITAMIN B12, AND FOLIC ACID LEVELS IN BLOOD SERUM IN ROSACEA.

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Rosacea is a chronic inflammatory skin disease characterized by recurrent redness, erythema, papules, telangiectasias, edema, pustules, or a combination of these symptoms. Genetic factors, immune dysregulation, microorganisms, chronic inflammation, increased vascular reactivity, and other environmental factors are believed to play a role in the development of rosacea. Homocysteine is a sulfur-containing amino acid formed as a result of methionine metabolism. Hyperhomocysteinemia is associated with various systemic diseases, including cardiovascular, cerebrovascular and neuropsychiatric diseases.

**Objective:** To analyze homocysteine, vitamin B12 and folate levels in patients with rosacea.

**Materials and methods:** The study included 115 participants aged  $\geq 18$  years, including 75 patients with rosacea and 40 healthy controls. Rosacea severity was assessed using the National Rosacea Society scale. Clinical and laboratory parameters were examined and analyzed.

Venous blood samples were collected from participants in both groups. Before analysis, samples were immediately centrifuged and stored at  $-80^{\circ}\text{C}$ . Total serum homocysteine was measured using a Cobas 8000 c702 analyzer (Roche Diagnostics, Mannheim, Germany). Serum vitamin B12 and folic acid levels were measured using a Cobas 8000 e801 analyzer (Roche Diagnostics).

**Results of our research:** Serum homocysteine levels in patients with rosacea were  $10.79 \pm 2.96$  and  $10.15 \pm 3.16$  in the healthy control group ( $p = 0.0671$ ). Serum vitamin B12 and folic acid levels in patients with rosacea were significantly lower than in the healthy control group ( $p = 0.011$  and  $p = 0.0173$ , respectively). Serum Hcy levels were significantly higher in men than in women ( $p = 0.0017$ ). Serum



vitamin B12 and folic acid levels also correlated with rosacea severity ( $p < 0.001$ ). Moreover, the serum Hcy level was inversely related to the serum folate and vitamin B12 levels ( $r = -0.287$ ,  $p < 0.001$  and  $r = -0.263$ ,  $p < 0.001$ ). The more severe the rosacea, the lower the vitamin B12 and folate levels ( $p < 0.001$ ). Moreover, we found that the serum homocysteine level was inversely related to the serum vitamin B12 and folate levels, which are involved in homocysteine metabolism.

**Conclusions:** We found a significant positive correlation between the severity of rosacea and the serum homocysteine level. In addition, this study showed a significant decrease in the serum vitamin B12 and folate levels in rosacea patients compared with healthy controls. Our results suggest that physicians should be aware of possible hyperhomocysteinemia in patients with severe rosacea. Although further prospective studies are needed to confirm the efficacy of vitamin B12 or folate in the treatment of rosacea, we suggest that dietary supplementation with folate and antioxidant vitamins in patients with severe rosacea and hyperhomocysteinemia may improve rosacea symptoms by lowering blood homocysteine levels.

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