URINARY EXCRETION OF HYDROXYPROLINE IN PATIENTS DURING H.B.O. TREATMENT

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Introduction

In the collagen biosynthesis the fibroblast provides for the incorporation of the hydroxyproline (which is about 14%) in the polypeptidic chain. Not being at the cell disposal, the hydroxyproline aminoacid is taken from the process of proline hydroxylation; this process can only take place when the proline itself has been incorporated in the polypeptidic chain, that is to say when the proline remnant hooks up the building-up polypeptidic chain. This happens always before the production of the peptide binding between the carboxyl terminal of the chain itself and the amidic binding of the following glycine. The hydroxylation is conditioned by the formula mass and by the lenght of the building-up polypeptidic chain (≈ 10.000). The prolines at the beginning of the building-up polypeptidic chain, close to NH_2-terminal, are excluded from this process. The hydroxylation process, catalyzed by an enzyme using molecular oxygen to make up OH, needs Fe^{2+}, vit. C and alphaketoglutaric acid.

The aim of our research was to evaluate the different urinary excretion of hydroxyproline during H.B.O. treatment.

Methods

Twenty adult patients with exceptionally severe, long-standing dermic lesions, who had failed to respond satisfactorily to convention treatment were treated with short-term (daily, for 10 days), low-dose (2 atm x 1 hour) with H.B.O. (Galeazzi model - Italy). None had any hystory of hypertension, renal, epatic, or bone marrow disease.

Monitoring of patients during H.B.O. treatment.

Monitoring included measurement of urinary excretion of hydroxyproline (Huszard-method, 1980) during 24 hours. All the patients performed an acollagenic diet.

Result

The reduction of the 24 h urinary excretion of hydroxyproline was dependent and statistically significant ($P<0,01$) for the 1°, 5° and 10° H.B.O. treatment if compared with the baselise or with the control group who didn't perform H.B.O.

Discussion

Compromised tissues are frequently hypoxic, with oxygen tensions frequently below 15 mmHg. Tissue oxygen tension of 30-40 mmHg are necessary for the synthesis of fibroblasts and subsequent development of a collagen matrix for capillary budding in avascular areas. H.B.O. can deliver these levels of oxygen, thereby stimulating fibroblasts and enhancing collagen synthesis. It is conceivable that the reduced urinary excretion of hydroxyproline, coupled with advancing fibroblast viability in higher collagen biosynthesis during H.B.O. treatment.

References

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