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Oro-facial manifestations, oxidative stress and antioxidants markers in serum and saliva of patients with Beta thalassemia major in Karbala city

A Thesis
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Abstract

Background:

Thalassemia is a hereditary anemia resulting from defects in hemoglobin production. Beta Thalassemia, which is caused by a decrease in the production of beta globin chains, affects multiple organs and is associated with considerable morbidity and mortality.

Aims of the study:

The aims of this study were to study the oro-facial manifestations in beta thalassemia major patients and evaluation of the oxidative stress status in serum and saliva represented by malondialdehyde as oxidative stress indicator and also assessment of serum and saliva antioxidants which are ceruloplasmin and uric acid in beta thalassemic patients with and without periodontitis and compared that with the healthy individuals in addition to investigate the relation between the clinical findings and laboratory investigations.

Methods:

Eighty seven (87) subjects were consented and contributed in this study, twenty eight (28) thalassemic patients with periodontitis, thirty (30) thalassemic patients without periodontitis and twenty nine (29) healthy subjects that were age matched with the patients. Oral examination has been done for each subject. Serum and saliva sample have been taken from each subject for analysis, to study malondialdehyde as oxidative stress and antioxidants ceruloplasmin and uric acid.

Results:

Malocclusion was the most common prevalent oro-facial manifestations (60%), followed by rodent face (35%), brown pigmentation of oral mucosa (23%) and incompetent lip (8%). The mean serum and saliva malondialdehyde were

significantly higher in thalassemic patients with periodontitis than that in thalassemic patients without periodontitis and healthy subjects ($p<0.001$), while the mean serum and saliva ceruloplasmin were significantly higher in control group than that in other study groups ($p<0.001$). The mean serum uric acid was significantly higher in thalassemic patients without periodontitis than that in thalassemic patients with periodontitis and healthy subjects ($p<0.001$) and the mean saliva uric acid was significantly higher in thalassemic patients without periodontitis ($p<0.05$) compaired with thalassemic patients with periodontitis and healthy subjects.

The results of this study showed that there were no significant correlation between serum and saliva malondialdehyde in any of study groups, while there was a positive significant linear correlation between serum and saliva ceruloplasmin in thalassemic patients with periodontitis ($p<0.05$), a negative significant linear correlation in healthy subjects ($p<0.05$) , a positive significant linear correlation in thalassemic patients without periodontitis ($p<0.001$). The results showed that there was a positive significant linear correlation between serum and saliva uric acid in thalassemic patients with periodontitis ($p<0.05$), a positive significant correlation in thalassemic patients without periodontitis ($p<0.001$) and no significant correlation between serum and saliva in healthy subjects. On the other hand there were no significant correlation between serum and saliva (malondialdehyde, ceruloplasmin and uric acid) and clinical attachment loss ($p>0.05$), except a positive significant linear correlation between clinical attachment loss and saliva malondialdehyde ($p<0.05$) was found.

Conclusions:

Malocclusion was the most prevalent oro-facial manifestations of beta thalassemia major patients. Oxidative stress play a significant role in the pathogenesis of beta thalassemia ,which was the main cause of red blood cells destruction represented by significant elevation of serum and saliva

malondialdehyde and significant reduction of ceruloplasmin. Also oxidative stress remain contributing factor in periodontal tissue destruction, which was appeared as a significant increased level of saliva malondialdehyde and decreased saliva ceruloplasmin in patients with periodontitis and there was a significant correlation between saliva malondialdehyde and clinical attachment loss.