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Relationship between oxidative stress and apoptotic markers in lymphocytes of diabetic patients with chronic non healing wound.

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Abstract

AIMS:

Hyperglycemia causes generation of free radicals which leads to oxidative stress and apoptosis in various cells. The present study was undertaken to investigate the correlation between oxidative stress and apoptotic markers in lymphocytes of diabetic patients with chronic non healing wounds.

METHODS:

Thirty healthy, thirty uncontrolled type 2 diabetes mellitus (T2DM) and thirty uncontrolled T2DM with chronic, non healing, neuropathic diabetic foot patients were included in this study. Indices of oxidative stress inside the lymphocyte lysate were estimated by measuring content of superoxide dismutase (SOD), Catalase, Glutathione and malonaldialdehyde (MDA). Protein expression studies of pro and anti apoptotic markers were carried out to elucidate their possible involvement in diabetic context.

RESULTS:

SOD and MDA activity was significantly higher in the lymphocytes of diabetic patients having chronic, non healing diabetic wound as compared with healthy ($p<0.001$); whereas catalase and GSH activity was significantly reduced ($p<0.001$) in the same group. Expressions of pro apoptotic markers (Caspase-3, Fas and Bax) were significantly higher whereas reduced expression of anti-apoptotic marker (Bcl-2) were obtained in lymphocytes of diabetic and non diabetic individuals.

CONCLUSIONS:

Hyperglycemia confers pro apoptotic manifestations which are mostly through altered indices of oxidative stress within lymphocytic milieu.

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