The Role of Circulating Soluble Fms-Like Tyrosine Kinase-1 In Patients with Diabetic Foot Ulcer: A Possible Mechanism of Pathogenesis Via a Novel Link Between Oxidative Stress, Inflammation and Angiogenesis

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ABSTRACT

BACKGROUND:

Diabetic foot ulcer (DFU) is one of the most devastating diabetic consequences leading to amputations. Oxidative stress, inflammation, vascular insufficiency and neuropathy have been linked to DFU development. Since soluble fms-like tyrosine kinase-1 (sFlt-1) is one of the anti-angiogenic factors regulating vascular endothelial growth factor (VEGF) biological activity. So, we aimed to evaluate its role in pathogenesis of DFU and its correlation with oxidative stress and inflammatory markers.

METHODS:

60 type 2 diabetic patients: 30 without DFU and 30 with DFU in addition to 20 healthy controls were enrolled in the study. sFlt-1 and VEGF mRNA relative gene expressions and levels and sFlt-1/VEGF ratio were assessed. Also, Advanced oxidation protein products (AOPPs), malondialdhyde (MDA), Total thiol and, tumor necrosis factor alpha (TNF-α) levels were measured.

RESULTS:

sFlt-1 expression and level, AOPPs, MDA and TNF-α were significantly higher in diabetic patients as compared with the control group with highest levels in DFU patients. However, there were significant decrease in total thiol level and VEGF expression and level in diabetic patients with DFU.

CONCLUSION:

This study revealed that sFlt-1 is a major player in DFU pathogenesis and may be considered as a novel diagnostic biomarker for early detection of DFU.

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