

## ABSTRACT

It is a well-known fact that type 2 diabetes mellitus makes a substantial contribution to tuberculosis incidence. The huge prevalence of diabetes mellitus in Pakistan may be contributing to the increasing prevalence of TB incidences. The objective of the present study is to evaluate the role of sICAM-1 as a potential link between these two merging epidemics. To explore this hypothesis three groups of subjects were examined: 100 healthy controls, 100 T2DM patients and 100 patients with T2DM and TB. As leukocyte integrin's such as ICAM-1 has a significant effect on the functions of macrophages, so various hematological parameters such as WBCs, RBCs, Lymphocytes, Neutrophils, Platelets, Hemoglobin were also measured. In vivo production of sICAM-1 was measured using ELISA. When compared with healthy controls, patients with T2DM were found to have elevated levels of sICAM-1 ( $541.8 \text{ ng/ml} \pm 5.2$ ;  $p < 0.05$ ), patients with T2DM and TB were found to have low levels of sICAM-1 ( $127.7 \text{ ng/ml} \pm 4.1$ ;  $p < 0.05$ ). Our data suggested that in T2DM patients, elevated sICAM-1 levels are also responsible for reduced functioning of endothelial cell barriers. Thus in diabetic patients increased expression of sICAM-1 make them prone to infectious diseases such as tuberculosis by promoting increased invasion of mycobacterium through loose junctions. Moreover decreased cellular immunity in diabetic patients further worsen the condition. All these dysfunctional processes put diabetic patients at increased risk of tuberculosis. In conclusion, present study demonstrate that elevated levels of sICAM-1 can be used as a biomarker to predict tuberculosis in patients with type 2 diabetes mellitus.