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The Role of Soluble Adhesion Molecules in Type 2 Diabetes Mellitus

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Background: Diabetes mellitus (DM) is a chronic metabolic disorder that is steadily increasing worldwide and is a leading cause of morbidity and mortality. As reported by the World Health Organization (WHO), 346 million people are currently suffering from diabetes worldwide, and the number of deaths related to diabetes is expected to double by 2030. This highlights the importance of continued research and the need for novel methods to both prevent and treat this pandemic. Endothelial dysfunction plays a central role in the pathogenesis of diabetes mellitus and its vascular complications. The damage to the endothelium results in the release of soluble forms of adhesion molecules into the circulation and their concentrations are thought to correlate with endothelial cell activation or dysfunction. **Aims:** To determine the serum levels of soluble vascular cellular adhesion molecule-1 (VCAM-1) and intracellular adhesion molecule-1 (ICAM-1) in type 2 diabetes mellitus (T2DM) and their association with macrovascular and microvascular complications. **Methods:** A total of 20 blood samples were collected from diabetic patients at the Hamad Medical Corporation (HMC) between 2010 and 2011. The control blood samples were obtained from non-diabetic female students at Qatar University in Fall 2017. Serum concentrations of sICAM-1 and sVCAM-1 level were determined using magnetic bead multiplex assay. **Results:** The levels of sVCAM-1 (P- value 0.000005) and sICAM-1 (P- value 0.04) were both significantly higher in T2DM patients compared to the control group. There was a further increase in the levels of sVCAM-1 and sICAM-1 in diabetic patients with complications. There was a positive but not significant correlation between hyperglycemia, sVCAM-1 and sICAM-1 levels. **Conclusion:** T2DM is associated with high levels of sVCAM-1 and sICAM-1. Hyperglycemia is a major factor causing endothelial dysfunction in T2DM and the release of soluble adhesion molecules.

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