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The Role of Platelets in Hypoglycemia-Induced Cardiovascular Disease: A Review of the Literature

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Abstract:

Cardiovascular diseases (CVDs) are the leading cause of death globally as well as the leading cause of mortality and morbidity in type 2 diabetes (T2D) patients. Results from large interventional studies have suggested hyperglycemia and poor glycemic control to be largely responsible for the development of CVDs. However, the association between hypoglycemia and cardiovascular events is also a key pathophysiological factor in the development of CVDs. Hypoglycemia is especially prevalent in T2D patients treated with oral sulfonylurea agents or exogenous insulin, increasing the susceptibility of this population to cardiovascular events. The adverse cardiovascular risk of hypoglycemia can persist even after the blood glucose levels have been normalized. Hypoglycemia may lead to vascular disease through mechanisms such as enhanced coagulation, oxidative stress, vascular inflammation, endothelial dysfunction, and platelet activation. In the following review, we summarize the evidence for the role of hypoglycemia in platelet activation and the subsequent effects this may have on the development of CVD. In addition, we review current evidence for the effectiveness of therapies in reducing the risk of CVDs.