EFFECTS OF AN INTENSIVE GLYCEMIC CONTROL WITH INSULIN ON PLATELET AGGREGATION PROFILE IN PATIENTS WITH ACUTE CORONARY SYNDROME: THE CHIPS (CONTROL DE LA HIPERGLUCEMIA Y FUNCIÓN PLAQUETARIA EN LOS SÍNDROMES CORONARIOS AGUDOS) STUDY

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Background: Hyperglycemia is associated with increased platelet reactivity and has prognostic implications in patients presenting with an acute coronary syndrome (ACS). However, if strict glycemic control can modulate platelet function in this setting has been poorly explored. The aim of this study was to assess the effects of intensive glycemic control on platelet function in ACS patients.

Methods: The CHIPS (Control de la Hiperglucemia y Función Plaquetaria en los Síndromes Coronarios Agudos; ISRCTN35708451) study was a prospective, randomized study evaluating the effects of intensive glycemic control on platelet function in ACS patients with hyperglycemia. Patients (n=115) were randomized to undergo: a) intensive glycemic control (IGC) with intravenous insulin during first 24 hours, followed by subcutaneous ultra-slow insulin and rapid-acting insulin for meals (glucose 80-120mg/dl), or b) conventional glycemic control (CGC) with subcutaneous insulin when needs (glucose <180mg/dl). Platelet aggregation using light transmittance aggregometry was assessed with various agonists, including ADP (5 and 20μM), ADP) epinephrine (10 and 20μM), and TRAP (10, 25 and 100μM).

Results: Patients were randomly assigned to IGC (n=59) or CGC (n=56). There were no significant differences between groups in their acute phase managements. At baseline, platelet function was similar between groups. At discharge, adjusted analysis of platelet aggregation showed a significant reduction in IGC patients compared with CGC using all assays: ADP 5μM (30.9% for IGC vs 40.1% for CGC, p=0.006), ADP 20μM (48.2% vs 59.1%, p=0.002), epinephrine 10μM (26.6% vs 35.6%, p=0.032), epinephrine 20μM (30.4% vs 39.3%, p=0.048), TRAP 10μM (37.8% vs 46.8%, p=0.05), TRAP 25μM (64.1% vs 69.2%, p=0.033), and TRAP 100μM (71.5% vs 75.5%, p=0.007).

Conclusion: In ACS patients presenting with hyperglycemia, IGC results in reduced platelet reactivity compared with CGC.