Abstract

Background: Stress hyperglycaemia is common in the intensive care unit (ICU) setting and has been related to a worst outcome. Objective: The objective was to characterize the association of glucoregulatory hormones, mainly incretins, with the levels of glycaemia, and its relationship with outcome in ICU patients. Methods: We prospectively studied 60 patients. Stress hyperglycaemia was diagnosed when glycaemia was > 115 mg/dL. At ICU admission we determined glycaemia, insulin, glucagon, cortisol, glucose-dependent insulino-tropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) plasma levels. Groups were compared using Kruskal-Wallis test. The association between glycaemia levels and glucoregulatory hormones was evaluated using linear regression. Results: Forty-five patients (75%) had hyperglycaemia. We observed no differences in glucoregulatory hormones levels between normo- and hyper-glycaemia groups. Gly-caemia levels were not significantly correlated with insulin, glucagon, cortisol or GIP levels, but were correlated with GLP-1 (p = 0.04). GLP-1 was also correlated with cortisol (p = 0.01), but failed to show a significant correlation with insulin, glucagon or GIP levels. Lower levels of plasma GLP-1 were found in patients with stress hyperglycaemia requiring vasoactive support (p = 0.02). Conclusions: Glycaemia levels were correlated with GLP-1 levels in ICU patients. GLP-1 levels were also associated with cortisol. Patients with stress hyperglycaemia who required vasoactive support had lower incretin levels compared with those patients with stress hyperglycaemia who were hemodynamically stables. (ClinicalTrials.gov Identifier: NCT01087372)

Keywords

Stress hyperglycaemia, Incretins, Glucose-dependent insulino-tropic polypeptide, Glucagon like peptide-1, Critically ill patients.