Bariatric surgery results in patients with type 1 diabetes mellitus on continuous subcutaneous insulin infusion therapy

Resultados de la cirugía bariátrica en pacientes con diabetes mellitus tipo 1 tratados con infusión subcutánea continua de insulina

Obesity is correlated with the development of chronic metabolic conditions such as type 2 diabetes mellitus (T2DM), hypertension and hyperlipidaemia. Bariatric surgery in an effective treatment for obese T2DM patients. Nowadays, obesity also affects type 1 diabetes mellitus (T1DM) patients. In fact, 13% of T1DM patients suffer from obesity and up to half of the patients are either overweight or obese. However, evidence about the effect of bariatric surgery on T1DM remains unclear.

Four recent systematic reviews described data from about one hundred obese T1DM patients treated with bariatric surgery. These reports confirmed bariatric surgery as a tool for significant weight loss and insulin requirements reduction, although benefits in other glycaemic endpoints were not consistent. Hypoglycaemic episodes have been described after bariatric surgery by most authors. Comorbidity resolution was satisfactory and a reduction in medications needed to treat hypertension and dyslipidaemia was an additional benefit.

The rising incidence of obesity in T1DM patients is related to the use of intensive insulin therapy to maintain tight glycaemic control. Continuous subcutaneous insulin infusion (CSI) allows attach tight glycaemic objectives without an increased risk of hypoglycaemia. Therefore, CSI use in routine clinical practice is increasing in the last two decades. However, there is a lack of information about the results of bariatric surgery in obese T1DM patients on CSI therapy.

The objective of the present study is to describe the impact of bariatric surgery on glycaemic control, hypoglycaemia, insulin requirements and metabolic outcomes in obese T1DM patients treated with CSI. The initiative came from the Working Group of Diabetes and Technology of the Spanish Diabetes Association. All members of the group were asked to perform a retrospective analysis of T1DM patients on CSI therapy submitted to bariatric surgery from January 2001 to January 2016, with at least 2 years of follow up. The study protocol was approved by each Ethic Institutional Review Board and all patients signed informed consent. T2DM or T1DM patients treated with other insulin regimens different from CSI were excluded. All patients met the Spanish Endocrinology and Nutrition Society criteria for bariatric surgery: (1) body mass index (BMI) ≥ 40 kg/m², (2) BMI 35–39.9 kg/m² and a serious weight-related health problem consequence of obesity, such as diabetes mellitus, high blood pressure, dyslipidaemia or severe sleep apnoea. The diagnosis of T1DM was verified in all patients by the presence of autoantibodies known to be associated with T1DM (islet cell cytoplasmic antibodies, ICA; antibodies against IA-2 protein, IAA; 65-kDa glutamate decarboxylase, GAD65) and/or absence of C-peptide and/or diabetes ketoacido-
Our patients showed carbohydrate intake and insulin bolus reductions that could explain this hypothesis.

Our study was limited by small sample size and could not be representative for all T1DM patients treated with CSII. Nevertheless, our findings suggest that bariatric surgery induces weight loss but does not improve glycaemic control in T1DM patients on CSII. Otherwise, a negative impact on glucose control has been not observed. Thus, the role of bariatric surgery in such patients will require larger and longer studies.

Bibliografia


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