

ABSTRACT

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In diabetes mellitus, hypoglycaemia is defined as a condition that is associated with abnormally low blood glucose levels (≤ 3.9 mmol/l), which puts the body at potential risk. The first part of the work is devoted to the treatment of hypoglycaemia associated with physical activity in patients with type 1 diabetes mellitus. The results showed that standardized moderate-intensity body movement without pre-agreed preventive measures led to hypoglycaemia in all participants. During exercise, the rate of ABG decline ranged from 0.7 mmol/l to 1.7 mmol/l in 10 minutes. During recovery after ingestion of 20 g of carbohydrates, the rate of increase in ABG ranged from 0.6 mmol/l to 1.9 mmol/l in 10 minutes. The amount of glucose administered resulted in recovery from hypoglycaemia in all study participants and maintained glycemia above this level for an additional rest period of 60 minutes after glucose ingestion.

The second part of the work was devoted to comparing the characteristics of the results on the one hand of treatment in the same group of patients with type 2 diabetes mellitus in the period of treatment with NPH insulin and oral antidiabetics and on the other hand in the subsequent period when NPH insulin was replaced by insulin glargine.

The results showed that during treatment with insulin glargine, there was a significant decrease in HbA_{1c} (difference 3.0 ± 10.0 mmol/mol, $p = 0.0002$) in the whole study group and at the same time there was no significant increase in the frequency of hypoglycaemia. In addition, there was a reduction of the area under the curve (AUC) of glycaemia in insulin glargine treatment.

Keywords

Diabetes mellitus, hypoglycaemia, physical activity, treatment, NPH, glargine, HbA_{1c}, glycaemic variability