

FEASIBILITY, SAFETY AND OUTCOME OF MULTIPLE DAILY INSULIN INJECTIONS FOR GLUCOSE CONTROL IN DIABETIC PATIENTS HOSPITALIZED IN GENERAL MEDICINE WARDS

A. E. Buchs, R. Bloemers, E. Shiloah, M. Horowitz, S. Aminov, Y. Ramot, M. Rapoport
Internal Medicine Departments C and B, The Diabetes Unit, Assaf Harofe Medical Center, Zerifin

Background: Strict glucose control in patients hospitalized in medical or surgical intensive care units improves clinical outcomes of acute myocardial infarction, cardiac surgical procedures, infection and critical illness when treated with intravenous insulin. It is not known whether strict glucose control is also beneficial in patients hospitalized in general medical and surgical wards, especially when treated with multiple daily subcutaneous insulin injections (MDI).

Aim: To test the feasibility and safety of reaching tight glucose control through MDI with long-acting basal insulin (glargine) and pre-meal rapid-acting insulin analogues (aspart or lispro) in diabetic patients hospitalized in a general medicine ward.

Methods: Eighty eight adults suffering from type 1 or 2 diabetes mellitus, hospitalized in our internal medicine department for any acute illness were included in the study if their fasting blood glucose on the first morning of hospitalization was higher than 130 mg/dl. Capillary blood glucose levels were measured seven times a day. The first fifty patients were treated by a conservative approach; the subsequent thirty eight patients by a more stringent protocol. Basal Glargine insulin was administered at 0.2 to 0.8 units/kg body weight in the morning and the pre-prandial rapid-acting insulin at 10 – 40% of the daily basal insulin dosage.

Results: In the stringent protocol, mean daily glucose levels reached their nadir on the first day at 191 ± 6 mg/dl and remained stable throughout the 4-day hospitalization. 60% of the patients attained a daily mean glucose of < 180 mg% at day two. Fasting glucose levels dropped from 204 ± 7 mg/dl on admission to 158 ± 8 mg/dl ($p = 0.0002$) at day two and stabilized. The mean post-prandial glucose level was also steady throughout and ranged from 204.8 ± 55.0 mg/dl on day 1 to 197 ± 12 mg/dl on the fourth day. Fourteen hypoglycemic events with glucose levels < 60 mg/dl occurred in 10 of the 88 study patients; only one serious event of hypoglycemia with a value of 37 mg/dl was noted.

Conclusion: Intensive insulin treatment with multiple daily injections of insulin is feasible and safe in diabetic patients hospitalized in general medicine wards. Further studies, applying ours or similar intensive insulin treatment algorithms are needed to evaluate their clinical benefits and cost effectiveness.