

Effect of Insulin Glargine on recovery of patients with Diabetic Ketoacidosis

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Background and aims: Diabetic Ketoacidosis (DKA) is one of emergency conditions caused by acute hyperglycemia which may be associated with both type 1 and 2 diabetes, mostly type 1. The main treatment is injection of rapid-acting Regular insulin. Some studies suggest that giving long-acting insulin Glargine in addition to the standard regimen of DKA, reduces the time of recovery from DKA, and prevent rebound hyperglycemia after discontinuation of the infusion. This study was aimed to investigate the effect of insulin Glargine on recovery of patients with DKA.

Methods: A randomized clinical trial (RCT) conducted on 40 patients (twenty patients in each group) with DKA admitted in the Department of Endocrinology and Metabolism of Imam Reza Hospital related to Tabriz University of Medical Sciences. Both groups received standard treatment regimen for DKA. In addition, the experimental group was given 0.4 U/kg of insulin glargine within three hours of initiation of IV insulin infusion. After recovery from DKA and discontinuation of regular insulin infusion, both groups received regular insulin subcutaneously 6-12 units every 6 hours.

Results: The mean duration of acidosis correction time and recovery from DKA was 13.77 ± 6.10 hours in the case group and 16.91 ± 6.49 hours in control group ($p=0.123$). The mean dosage of regular insulin until recovery from DKA was 84.8 ± 45.6 units in the case group and 116.5 ± 91.6 units in control group ($p=0.17$). Hypokalemia occurred in 3 patients in case group and 4 patients in control group ($p=1$). Seven episodes of hypoglycemia was seen in 5 patients in cases group, in comparison with 4 episodes in 4 patients in control group ($p=1$). In 35% of samples in case group and 51% in controls, the blood sugar (BS) was more than 180 mg/dl for 24

hours after discontinuation of the insulin infusion ($p=0.046$). The mean duration of hospitalization was 5.1 ± 1.88 days in case and 5.9 ± 2.19 days in control group ($p=0.225$).

Conclusion: Adding insulin Glargine to the standard treatment regimen of DKA reduced the average time of recovery from DKA to 3.1 hour, without incurring episodes of hypoglycemia and hypokalemia, however this change was not statistically significant. This also significantly reduced BSs over than 180 mg/dl until 24 hours after discontinuation of insulin infusion, but did not affect the duration of hospitalization. It seems that the non-significant difference in the time of recovery from DKA be related to the paucity of sample size and close monitoring of DKA patients in both groups which resulted in fine adjustment of insulin and fluid intake.

Key words: DKA, Glargine, Treatment