
Low-dose Metformin can Safely Improve Glycemic Control in Type 2 Diabetic Patients Receiving Maintenance Hemodialysis (HD): an assessment by continuous glucose monitoring (CGM)

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[OBJECTIVE]

Studies show that the use of metformin in HD patients may potentially increase the risk of lactic acidosis. The aim of our study was to evaluate the safety and effect of metformin with appropriate dose reduction to improve glycemic control in patients with type 2 diabetes (T2D) on HD.

[METHODS]

Subjects were six HD patients in our hospital, with T2D (av. BMI=29.7+5.9, glycoalbumin: GA>27%), treated with insulin degludec (8-35 units/day) + dulaglutide (0.75mg/week), with obesity and poor glycemic control. After adding low-dose metformin (250-500mg/day) to the medication, serum lactate level and pH of all six patients were monitored once in two weeks. Glycemic control (assessed by CGM) was calculated before and 4 weeks after the initial administration, and the mean amplitude of glycemic excursions (MAGE) was calculated.

[RESULTS]

As shown in Figure (each color represents the mean glycemic profile of one patient), glycemic control improved by low-dose metformin as MAGE significantly decreased from 128.4+69.1 mg/dL to 83.4+43.3 mg/dL ($p<0.05$) without episodes of hypoglycemia. Mean GA significantly reduced from 32.0% to 22.62% ($p<0.01$), whereas there were no significant changes in the serum pH and lactate levels for 3 months.

[CONCLUSION]

After a single hemodialysis session, more than 90% of metformin and lactate were cleared, and the acid-base balance corrected. Unlike in pre-HD patients with impaired renal function, in patients on maintenance HD, metformin may potentially be safe and useful in controlling plasma glucose level when the dosage is appropriately reduced.