

FASTING PLASMA LACTATE IN THE ELDERLY WITH TYPE 2 DIABETES RECEIVING METFORMIN THERAPY

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BACKGROUND: The efficacy and benefits of metformin therapy in type 2 diabetes have been established. Many diabetologists suggest metformin as a first-line oral antidiabetic drug in type 2 diabetes. Lactic acidosis is a rare but serious complication of metformin therapy especially in the elderly. The aims of this study were to measure fasting plasma lactate concentrations in ambulatory older type 2 diabetics receiving metformin therapy and identify independent factors associated with high plasma lactate levels.

METHODS: Thirty-four ambulatory elderly type 2 diabetic patients (mean age 84.2, range 80 to 98) under metformin therapy were enrolled in this cross-sectional study, with another 34 patients as controls (mean age 58.7, range 38 to 70). Fasting serum electrolytes, creatinine, bicarbonate and plasma lactate concentrations were determined in each patient regardless of symptoms. The associations among these parameters were calculated by the Pearson's correlation test.

RESULTS: There were significant differences between the older patient group and the control group in terms of disease duration (16.8 ± 12.3 year vs 8.9 ± 7.1 year; $p < 0.01$), daily metformin dose (1411.8 ± 468.2 vs 1632.3 ± 481.6 mg; $p < 0.05$), body mass index (24.0 ± 3.6 vs 26.4 ± 4.0 Kg; $p = 0.01$) and estimated creatinine clearance (eCcr) (43.2 ± 12.0 vs 71.9 ± 24.1 mL/min; $p < 0.01$). Significantly more elderly patients had a plasma lactate above the upper limits of the reference range (21 vs 11 cases or 30.9% vs 16.2%; $p = 0.03$, Chi-square test). The highest plasma lactate concentrations in these two groups were 26.3 and 21.6 mg/dL, respectively. On linear regression analysis, a significantly positive association was also found between plasma lactate and serum creatinine ($r = 0.36$; $p = 0.03$) in the older group.

DISCUSSION: The present study showed that metformin therapy is generally safe in elderly type 2 diabetic patients. However, significantly more patients in this group than in the control group had hyperlactatemia. Because this is a cross-sectional study involving ambulatory elderly patients, results may not be extrapolated to the whole population of elderly diabetic patients who are under metformin treatment.

Key words: type 2 diabetes, elderly, metformin, hyperlactataemia