

LETTER TO THE EDITOR

Guneyssel et al (1) have reported a patient with severe diabetic ketoacidosis, successfully treated with infusions of sodium bicarbonate. This is an invitation to commentary with rational explanation of this excellent therapeutic result.

Since the first description by Kussmaul (2) nothing has changed on the fact that in diabetic ketoacidosis life-threatening is only coma, the most severe stage (the patient of Guneyssel had also limited cooperation and orientation). Recently, Edge et al (3) have confirmed earlier reports that the immediate cause of coma is low blood pH (or, more correctly, increased concentration of hydrogen ions H⁺), and not high blood glucose concentration. The glycolytic enzyme phosphofructokinase is pH dependent (4), because its activity is decreasing with decreasing pH, and, thus, glucose utilisation in brain cells is impaired. Therefore, clinical consequences of decreasing blood pH are drowsiness – stupor – coma – death. Life-saving is only increase of the low blood pH, as soon as possible (as in patient reported by Guneyssel), before irreversible damage of brain cells develops.

Guneyssel et al (1) have quoted the paper of Morris et al (their reference 11) “prospective randomized study in 21 patients failed to show either beneficial or deleterious changes in morbidity or mortality using the bicarbonate therapy in DKA patients”. It is necessary to emphasize that these 21 patients were included in the study “after consent form was obtained from the patient”: i e, the patients were not comatose and, thus, the study was unable to give answer to the question whether the applied treatments were life-saving or not.

On the other hand, several authors have reported zero lethality in comatose patients with diabetic ketoacidosis, e g, Fiordalisi et al (5) and Yordam et al (6); their treatment included also infusions of alkalisating solutions. Where can we find published reports on zero lethality in similar patients without infusions of alkalisating solutions? And where are published reports on comatose patients with diabetic ketoacidosis recovering to full alertness without increase of the very low blood pH?

References

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