

Supplementary Materials

Relationship Between Bedside Ketone Levels and Time to Resolution of Diabetic Ketoacidosis: A Retrospective Cohort Study

Yoshihiko Yuyama et al.

Department of Pediatrics, Osaka City University Graduate School of Medicine, Osaka, Japan

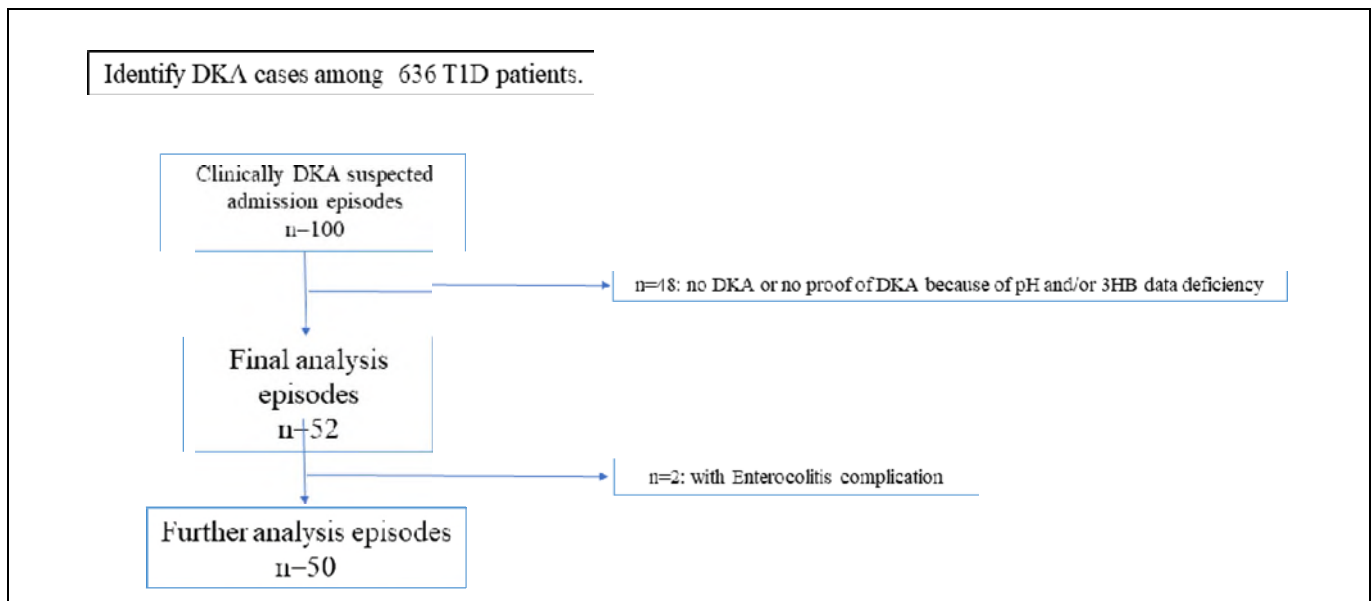
**Corresponding author:* Tomoyuki Kawamura, MD, PhD, Department of Pediatrics, Osaka City University Graduate School of Medicine, Asahicho 1-4-3, Abeno-ku, Osaka City, Osaka 545-8585, Japan.

Phone: +81-6-6645-3816, Fax: +81-6-6636-8737

E-mail: kawam@med.osaka-cu.ac.jp

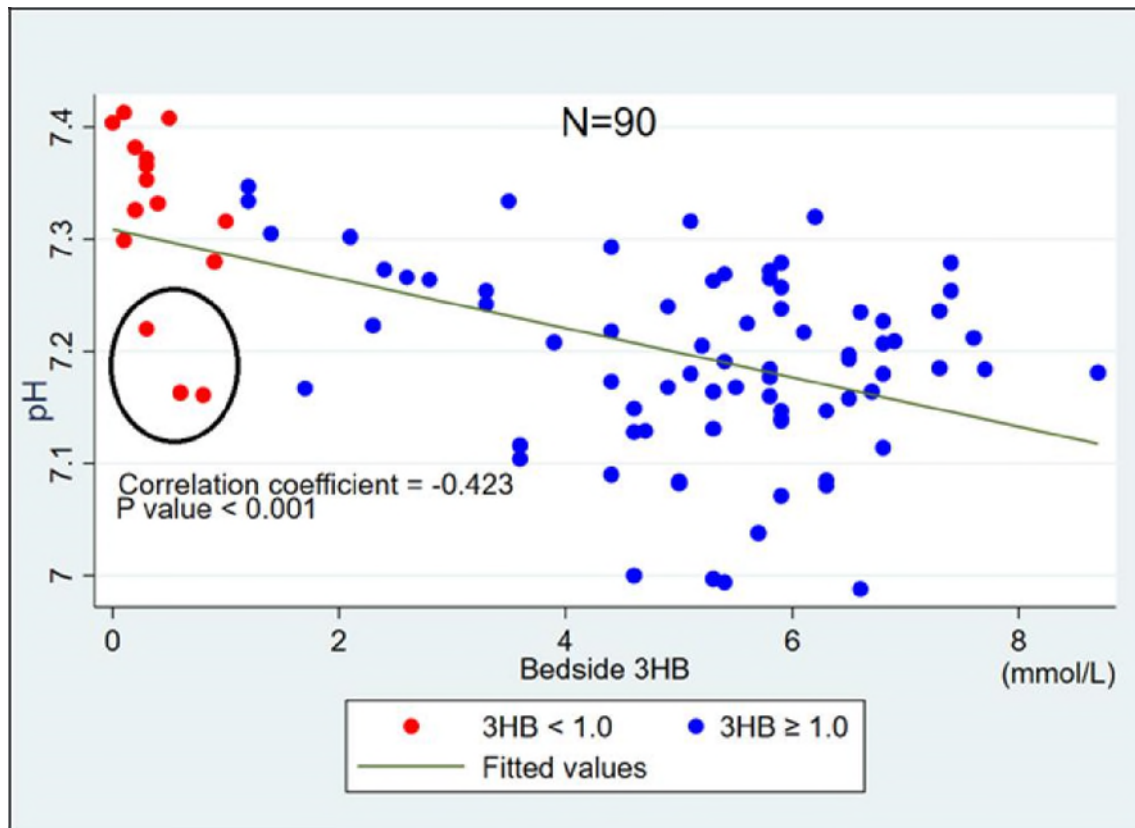
Supplementary Fig.1. Flowchart illustrating the patient recruitment process.

All medical records of registered patients with T1D and admitted to our hospital were scanned



and 636 patients with T1D were identified. Of these, 100 were admitted with suspected DKA and 48 cases had missing data on DKA (e.g., blood pH, 3HB, or ketone body).

Supplementary Fig. 2. Relationship between pH and bedside 3HB in all blood samples obtained from the 52 study patients (n=90).



Red: patients whose 3HB was ≤ 1.0 mmol/l, *blue*: patients whose 3HB was > 1.0 mmol/l. The pH levels of all the red cases had normalized, except for three data points that still showed acidemia. The three data points were for two different patients. Two points (3HB=0.3, 0.8) were for the same patient with established T1D who had gastroenteritis with diarrhea, severe nausea, and fever. The other case also had fever and diarrhea and was diagnosed as gastroenteritis on admission. Therefore, the delay in recovery of symptoms and pH of three episodes was affected by gastroenteritis. Regression lines were calculated by linear regression analysis. P values by Spearman rank correlation analysis. 3HB; serum 3-hydroxybutyrate

Supplementary Table 1. Relationship between latency to DKA resolution and covariant in newly diagnosed and established T1D patients.

	Newly diagnosed (n=13)		Established Cases (n=39)	
Baseline data	Correlation coefficient	P	Correlation coefficient	P
On admission				
pH	0.04	0.901	-0.19	0.251
BG	0.15	0.621	-0.05	0.757
3HB	0.72	0.005	0.08	0.600
Initial insulin dose rate	-0.16	0.606	0.05	0.769
Base excess	-0.004	0.989	-0.186	0.258
Anion gap	0.237	0.436	0.211	0.198
Treatment				
Total insulin infusion dose per kg body weight	0.40	0.183	0.09	0.593
Insulin dose till ketone bodies <1.0 mmol/L	0.70	0.008	0.29	0.070

Data are correlation coefficient and P values.

P values by Spearman correlation analysis.

DKA; diabetic ketoacidosis. T1D; type 1 diabetes. 3HB; serum 3-hydroxybutyrate, BG: blood glucose.

Supplementary Table2. Relationship between latency to DKA resolution and covariant for newly diagnosed and established T1D patients, excepting outlier two cases.

	Newly diagnosed (n=12)		Established Cases (n=38)	
Baseline data	Correlation coefficient	P	Correlation coefficient	P
On admission				
pH	0.06	0.854	-0.19	0.262
BG	0.27	0.401	-0.050	0.767
3HB	0.60	0.004	0.17	0.314
Initial insulin dose rate	-0.23	0.469	0.042	0.804
Base excess	0.000	1.000	-0.19	0.258
Anion gap	0.18	0.578	0.22	0.192
Treatment				
Total insulin infusion dose per kg body weight	0.53	0.076	0.11	0.523
Insulin dose till ketone bodies <1.0 mmol/L	0.60	0.038	0.17	0.314

Data are correlation coefficient and P values.

P values by Spearman correlation analysis.

DKA; diabetic ketoacidosis. T1D; type 1 diabetes. 3HB; serum 3-hydroxybutyrate, BG: blood glucose.