**Title:** *A retrospective analysis of diabetic ketoacidosis at Westmead Hospital: predictors of DKA resolution, insulin requirements and intravenous fluid management.*

At ADC 20201, we identified increased risks of adverse outcomes with hyperosmolar DKA (H-DKA) (serum osmolality ≥ 320).

**Aim:** To analyse this data regarding patient outcomes, identify factors associated with slower DKA resolution and examine key elements of DKA management including insulin infusion rate, and type of intravenous fluids, aiming to identify potential improvements in our DKA management protocol.

**Method:** 120 patients identified with DKA (97) and H-DKA (23) at Westmead Hospital between 2015-2017 were reviewed. DKA resolution was defined as BGL < 11.1, ketones < 1.0 and bicarbonate ≥ 16. Wilcoxon rank-sum test, ANOVA and Fisher’s exact test compared baseline characteristics, time to DKA resolution, adverse events, total insulin dose and IV fluid type and volume. Multivariate analyses were performed using linear and logistic regression.

**Results:** Median DKA resolution time was 12 hours in both DKA and H-DKA groups. H-DKA was associated with acute kidney injuries (12/23, p < 0.01), acute coronary syndrome (7/23, p < 0.01), deep vein thrombosis (2/23, p = 0.035) and noradrenaline use (5/23, p < 0.01). Factors associated with slower DKA resolution included higher weight (p < 0.001), lower admission bicarbonate (p = 0.014) and chloride (p = 0.038). 29 patients who required increased insulin infusion rate were heavier (mean weight 87 vs 71kg, p = 0.02) and had slower DKA resolution (OR 1.45, p <0.01). Higher volume of normal saline in the first 24 hours (4.67 vs 3.86L) was associated with hyperchloraemia (p = 0.002) and delayed normalisation of bicarbonate (OR 1.22, p = 0.03). Balanced crystalloids were not protective.

**Conclusion:** Patients with H-DKA experienced more adverse events. Higher weight, lower admission bicarbonate and chloride were associated with slower DKA resolution. Higher patient weight may warrant a higher initial insulin infusion rate. Higher normal saline volume was associated with prolonged acidosis.

Reference:

1. Singh T et al: *Diabetic ketoacidosis with hyperosmolality: a separate entity? A retrospective analysis of hyperglycaemic emergencies at Westmead Hospital 2015-2017.*

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