Diabetic Ketoacidosis due to Faking of Blood Sugar Measurements by an Adolescent

The current guidelines for care of children and adolescents with Type-1 Diabetes (T1D) recommend a gradual transition of independence in its self management, appropriate to the level of maturity and understanding of the child or adolescent with emphasis on continued parental supervision throughout transition [1]. Lack of parental supervision may result in poor metabolic control or diabetic ketoacidosis (DKA), especially during adolescence.

A 12-year-old boy, diagnosed with T1D one year ago presented with severe DKA (blood pH 6.9, HCO3 6.4 mEq/L and positive urine ketones), and required insulin infusion for 16 hours. Due to frequent episodes of 'hypoglycemia', the boy had missed several insulin boluses over last two weeks, and then basal insulin as well for two days prior to presentation. The self-monitored blood glucose diary showed multiple records of blood glucose <50 mg/dL. There were no associated symptoms of hypoglycemia. On suspicion, the glucometer memory was checked that showed almost all records in the range of 250-400 mg/dL in the past 2 weeks; the average blood sugar was 290 mg/dL. The HbA1c was 9.8%. On further probing, it was revealed that the child was allowed independent self-care of his diabetes status by parents, and he recorded blood sugar readings in hypoglycemic ranges to avoid injections without realizing the consequences of missing insulin. A decision to allow only limited self-care autonomy to the child was taken after discussions with parents.

Children develop readiness for diabetes self-management at different rates and at different chronological ages [2]. Parental supervision during transition is associated with better glycemic control, and is instrumental to prevent deterioration in adherence and mishaps [3,4]. Adolescents, in particular, are at-risk for poor adherence due to unique biological and behavioral challenges during this period [4]. The desire to avoid injections altogether may push an unsupervised adolescent into faking blood sugar records and devising novel ways to fake measurements [5]. While missing the insulin boluses is associated with deterioration in HbA1c, missing the insulin altogether may result in DKA as happened in this patient. Although the blood sugar values could be easily detected to be fake in our patient by a careful history and checking the glucometer memory, a cleverer maneuvering may at times be very difficult to detect [5]. Supervision by parents or caregiver and assessment of readiness for self-care is thus of utmost importance during transition of autonomy of diabetes management in children and adolescents with T1D.

Acknowledgements: Dr Vijai Williams and Dr Muralidharan Jayashree, Pediatric Critical Care Unit, Department of Pediatrics, PGIMER, Chandigarh for their inputs and patient care.

DEVI DAYAL AND JAIVINDER YADAV*
Endocrinology and Diabetes Unit,
Department of Pediatrics,
PGIMER, Chandigarh, India.
**jai1984yadav@gmail.com*

REFERENCES

1. Phelan H, Lange K, Cengiz E, Gallego P, Majaliwa E, Pelicand J, *et al*. ISPAD Clinical Practice Consensus Guidelines 2018: Diabetes Education in Children and Adolescents. Pediatr Diabetes. 2018;19:75-83.
2. Comeaux SJ, Jaser SS. Autonomy and insulin in adolescents with type 1 diabetes. Pediatr Diabetes. 2010;11:498-504.
3. Agrawal J, Kumar R, Malhi P, Dayal D. Prevalence of psychosocial morbidity in children with type 1 diabetes mellitus: a survey from Northern India. J Pediatr Endocrinol Metab. 2016;29:893-9.
4. Lotstein DS, Seid M, Klingensmith G, Case D, Lawrence JM, Pihoker C,*et al*. Transition from pediatric to adult care for youth diagnosed with type 1 diabetes in adolescence. Pediatrics. 2013;131:e1062-70.
5. Peet A, Roosimaa M, Tillmann V. The ease of falsifying blood glucose measurements. Diabetes Res Clin Pract. 2014;104:e57.

The Oxygen Blender 'Blunder'

Oxygen is the first drug to be used at birth in the delivery room. It is also the first drug used during care of the sick newborn. Oxygen is hence made readily available and accessible, at all emergency points of care, round the clock. It is well known that hypoxia is common in sick newborns and an important predictor of outcome. In our zeal to deliver oxygen, we seem to forget that like a drug it has to be delivered in a proper 'dose'.

The oxygen blender is a mixing device that permits mixing of oxygen with compressed air, either from a wall