

Impact of demographic factors on Diabetic Ketoacidosis occurrence at Type 1 Diabetes onset in childhood

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OBJECTIVES

Diabetic Ketoacidosis (DKA) in children with newly diagnosed Type 1 Diabetes (T1D) has been associated in previous studies with several factors, such as age or season of diagnosis.

The aim of the present study was to assess the impact of age, gender, birth order and seasonality in DKA occurrence in newly diagnosed T1D pediatric patients.

METHODS

□ Data of children aged 0-14 years newly diagnosed with T1D between January 2010 and December 2015 were analyzed according to age, gender and seasonality of birth and date of diagnosis.

□ Both univariate and multivariate logistic regression analysis were used.

□ DKA diagnosis and its severity were classified according to ISPAD guidelines 2014.

Factors	DKA (n=89)	Non-DKA (n=70)	p-value
Age	7.56±4.05	8.74±4.02	0.070
Age>5 yrs	62(69.70%)	55(78.60%)	0.206
Gender(male)	40(44.90%)	44(62.90%)	0.025
Season of birth (FW)	52(58.40%)	35(50.00%)	0.289
Season of diagnosis (FW)	41(46.10%)	43(61.40%)	0.054
pH	7.19±0.05	7.40±0.04	<0.001
Urine Ketones	68(97.10%)	43(93.50%)	0.384
Order of birth 1st vs. other	46(52.90%)	35(50.00%)	0.720

Table 1. Factors affecting DKA occurrence at T1D diagnosis were only male gender and season of diagnosis.

Factors	Mild (n=29)	Moderate (n=39)	Severe (n=21)	p-value
Age	8.30±4.10	6.99±4.09	7.61±3.93	0.425
Age>5 yrs	22(75.90%)	25(64.10%)	15(71.40%)	0.569
Gender (male)	11(37.90%)	21(53.80%)	8(38.10%)	0.329
Season of birth (FW)	16(55.20%)	22(56.40%)	14(66.70%)	0.677
Season of diagnosis (FW)	12(41.40%)	16(41.00%)	13(61.90%)	0.250
pH	7.31±0.05	7.20±0.07	6.99±0.15	<0.001
Urine Ketones	22(100.00%)	30(96.80%)	16(94.10%)	0.423
Order of birth (1 st vs. other)	17(60.70%)	15(39.50%)	14(66.70%)	0.081

Table 2. Severity of DKA at T1D diagnosis was not affected by any of the factors studied.

RESULTS

❖ Hundred and fifty nine (159) newly diagnosed T1D children in the years 2010-2015 were recorded and 89 (55,9%) presented with DKA (severe DKA in 23.59%, moderate in 43.82%, and mild in 32.58%).

❖ In univariate logistic regression analysis neither age [Exp(B):0.930, 95% CI:0.859 – 1.006, p=0.072] nor the season of birth exhibited any significant effect [Exp(B):1.405, 95% CI:0.748 – 2.639, p=0.290] on DKA occurrence, while male sex was negatively associated with DKA at T1D diagnosis [Exp(B):0.482, 95% CI:0.254 – 0.915, p=0.026]. Furthermore, diagnosis during the cold months (fall-winter) was borderline negatively associated [Exp(B):0.536, 95% CI:0.284 – 1.014, p=0.055] with DKA, while the order of birth (1st born children vs. other) had no impact on DKA occurrence [Exp(B):1.122, 95% CI: 0.598 – 2.106, (p=0.720)].

❖ In multivariate logistic regression analysis only male gender [Exp(B):0.470, 95% CI:0.246 – 0.901, p=0.023] and the diagnosis during fall-winter [Exp(B):0.521, 95% CI:0.272 – 0.997 p=0.049] were statistically negatively associated with DKA occurrence at T1D diagnosis.

CONCLUSIONS

Male patients presented less frequently DKA at T1D initiation. Furthermore, diagnosis during the cold months is less often associated with DKA at T1D onset. All other factors investigated (order of birth, season of birth etc) had no impact on the severity of T1D at the initial presentation.

References

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