Characteristics of Type 2 Diabetes in Female and Male Youths

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Introduction

- Between 2001 and 2009 the prevalence of T2D in youths increased by 30.5% [1]
- The overall prevalence in youths is 0.22/1000, yet among ethnic minorities it is 0.42/1000. [2]
- Adult females have a higher predisposition to diabetes than adult males,[3] and are at higher risk of cardiovascular disease.[4]
- Type 1 diabetes has the same predominance among males and females.[5]
- T2D has not been thoroughly studied in youths due to its relative rarity, little is known about the differences in disease characteristics in male and female youths.

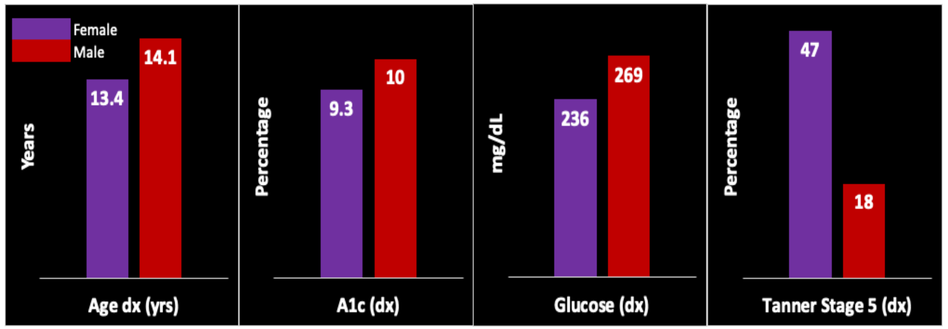
Aims

- Compare male and females for characteristics closely associated with pediatric T2D.

Methods

- Retrospective medical records analysis of 722 youths newly diagnosed with T2D in a large academic hospital in Houston, Texas (USA). 62.6% females, 8.9% non-Hispanic White, 57.7% Hispanic, 30.3% Black, 3.1% other
- Compared demographic, clinical and laboratory characteristics within the first year of diagnosis.
- The Tanner staging was preformed by a pediatric endocrinologist within 3 months of diagnosis.
- Diabetic Ketoacidosis (DKA) was defined using the standard criteria of the ISPAD Clinical Practice Consensus Guidelines 2018[6] in those with available biochemical data or by documentation of DKA in the medical record.
- With Bonferroni correction for the number of independent comparisons, p-values<0.0045 were considered significant.

Results



Variable	Females (SD)	Males (SD)	P-value	Females/ Male
Age dx (yrs)	13.4 (2.5)	14.1 (2.2)	0.0001	452/270
A1c (dx)	9.3 (2.5)	10.0(2.7)	0.0008	390/244
Glucose (dx)	236 (126)	269 (152)	0.0033	383/241
Tanner Stage 5 (dx)	47%	18%	<0.00001	248/128
HDL (within 1 yr)	39 (11)	36 (9)	0.0001	329/208
Triglycerides (within 1 yr)	194 (156)	244 (338)	0.021	327/209

Race/ ethnicity, T2D family history, age/ sex-adjusted BMI Z-score and C-peptide were not different at diagnosis.
Blood pressure percentile, non-HDL cholesterol, LDL cholesterol, NAFLD and microalbuminuria were not statistically different
In multivariable analysis adjusting for BMI Z-score, younger age and being at Tanner 5 were independently associated with being female (both p<0.0001), while race was not.

Conclusions

Girls are diagnosed with T2D younger than boys, possibly due to increase insulin resistance from earlier pubertal development.
Girls present with milder characteristics.
Due to known associations between A1c and outcomes, boys might be at risk for worse diabetes outcomes as girls.
The mechanisms underlying these differences are not yet clear.
Pediatric T2D is an area of continues interest due to the rising prevalence, and worse outcomes compared to adult T2D.

References

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