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High Rates of Ambulatory and Nocturnal Hypertension in Youth with Type 2 Diabetes

Melissa Gabbs, University of Manitoba; **Brandy Wicklow**, University of Manitoba; **Jonathan McGavock**, University of Manitoba; **Elizabeth Sellers**, University of Manitoba; **Tom Blydt-Hansen**, University of British Columbia; **Kristine Kroeker**, University of Manitoba; **Dan Chateau**, University of Manitoba; **Farrah Jabar**, University of Manitoba; **Allison Dart**, University of Manitoba

Background:

Youth with type 2 diabetes (T2D) are at high risk for developing cardiovascular complications. Recent guidelines from the American Academy of Pediatrics suggest screening for ambulatory hypertension in all youth with diabetes. However, little is known about 24-hour ambulatory blood pressures (ABPM) in youth with T2D.

Objective:

Describe ABPM findings of youth with T2D and identify the associations between ambulatory and nocturnal hypertension and early markers of cardiorenal morbidity.

Methods:

A cross-sectional analysis was used to examine 24-hour ABPM among 195 youth with T2D from The Improving renal Complications in Adolescents with T2D through REsearch (iCARE) study. Individuals were stratified into no hypertension, ambulatory, and nocturnal hypertension groups. Associations were evaluated between hypertension status, clinical risk factors, albuminuria and early cardiovascular risk [carotid intima media thickness (CIMT) and left ventricular mass index (LVMI)].

Results:

The cohort had a mean age of 14.9 ± 2.4 and a median diabetes duration of 2.0 (1.0,3.8) years, 67.7% were female. The majority of our cohort (69%, n=134) had hypertension on ABPM, and 48.2% (n=94) had isolated nocturnal hypertension. Hypertension was associated with elevated hemoglobin A1c ($p=0.02$), albuminuria (ACR $>2\text{mg}/\text{mmol}$; $p=0.02$) and increased CIMT ($p=0.04$). There were no differences in age at diagnosis, median duration of disease, BMIz score, or LVMI between groups.

Conclusion:

ABPM identified high rates of ambulatory and nocturnal hypertension in youth with T2D. Associations were seen with both renal and cardiovascular outcomes, supporting their routine use in clinical practice.