

Objective: to evaluate the diagnostic efficacy of the office blood pressure (OBP) and ambulatory blood pressure monitoring (ABPM) in the assessment of hypertension (HTN) in children with diabetes mellitus type 1 (DM1).

Methods: We analyzed OBP and ABPM measurements in 84 diabetic children (43 boys) obtained at a median age of 14.9 years and 6.3 ± 3.5 years after diagnosis of DM1. OBP and ABPM results were converted into standard deviation scores (SDS). In addition, we analyzed blood pressure loads and nighttime dipping. The comparison between OBP and ABPM was performed using kappa coefficient and receiver operator curve (ROC).

Results: HTN was diagnosed in 43/84 (51%) patients using OBP (>95th percentile) and in 24/84 (29%) patients using ABPM (\geq 95th percentile during 24h, day or night). Both methods were in agreement in 33 ABPM normotensive and 16 ABPM hypertensive patients (most had nighttime HTN); 32% patients had white coat HTN and 9.5% patients had masked HTN. The kappa coefficient was 0.175 (95% CI -0.034 to 0.384) suggesting poor agreement between OBP and ABPM. Diastolic OBP was a better predictor of ABPM HTN (ROC AUC=0.71 \pm 0.06) than systolic OBP (AUC= 0.58 \pm 0.07). The percentage of non-dippers ranged from 7 to 23% in ABPM normotensive patients and 21-42% in ABPM hypertensive patients who also had significantly higher BP loads ($p < 0.0001$).

Conclusion: Children with DM1 have a high prevalence of nocturnal, white coat- and masked HTN, which can not be assessed and predicted by the office blood pressure.