Key Words: Child, White Coat Hypertension, Ambulatory Blood Pressure Monitoring

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USE OF TASK FORCE CRITERIA TO INTERPRET PEDIATRIC AMBULATORY BLOOD PRESSURE MAY RESULT IN OVERDIAGNOSIS OF HYPERTENSION
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The interpretation of ambulatory BP (ABP) data in children is complicated by uncertainty over whether ambulatory hypertension should be defined using 95th percentile BP limits from the Task Force Report on High Blood Pressure in Children and Adolescents (TF) or normative pediatric ABP datasets (Soergel et al, J. Peds. 1997;130:178-84). To determine how the choice of 95th percentile BP limit affects the diagnosis of hypertension in children, we compared the group means of 24-hour ABP data from 152 children undergoing evaluation for persistently elevated clinic BP. Since the TF report includes no nighttime data and therefore provides no nighttime BP limits, hypertension for this analysis was defined as mean daytime BP greater than either: 1) the TF 95th percentile based on gender, age, and height percentile, or 2) the daytime 95th percentile from normative pediatric ABP data based on gender and height. BP load was calculated as the percentage of daytime BP readings exceeding the 95th percentile from each of the two limit sources. ABPM was performed using Spacelabs oscillometric monitors (Spacelabs Inc., Redmond, WA) programmed to measure BP every 20 minutes. Patient demographics showed a mean age of 12.6 ± 3.2 yrs, 66% male, and 40% white / 29% AA / 26% Hisp. For the daytime period, the number of successful readings was 38.2 ± 9, mean SBP was 129.6 ± 12.4 mmHg, and mean DBP was 75.8 ± 8.7 mmHg. Pair-wise t-test comparing the 95th percentile BP limit from the two limit sources showed that patient-specific TF limits were lower than the patient-specific daytime ABP limits (p<0.001) for SBP (125 vs. 131 mmHg) and DBP (75 vs. 85 mmHg). Correspondingly, the prevalence of ambulatory hypertension (systolic and/or diastolic) was higher by TF criteria than by ABP criteria (66% vs. 42%; p<0.001). Among pts specifically undergoing assessment for hypertension (n=73), the concordance of hypertension status between clinic hypertension and ambulatory hypertension was 75%. None of the analyses for relative agreement between average CBP and daytime ABP showed no significant differences for either SBP (125 vs. 124 mmHg) or DBP (75 vs. 74 mmHg). These results indicate that ABP does not systematically overestimate daytime ABP.

Key Words: Child, Hypertension, Ambulatory Blood Pressure Monitoring

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MULTIPLE CLINIC MEASUREMENTS DO NOT IMPROVE THE RELATIVE AGREEMENT BETWEEN CLINIC AND DAYTIME AMBULATORY BP IN CHILDREN
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Assessment of clinic BP (CBP) alone is reported to be unreliable for the evaluation of hypertension in children. To determine whether averaging multiple CBP measurements improves the relative agreement with daytime ambulatory BP (ABP), 3 sequential CBP measurements were performed immediately prior to 24-hour BP monitoring using the indential BP monitor in 90 children and adolescents (11.4 ± 3.9 yrs). The mean of the three CBP measurements was calculated to provide the average CBP. The relative agreement between average CBP and daytime ABP was assessed by: 1) comparison of the group means, 2) the absolute percent error of average CBP relative to daytime ABP, 3) the univariate correlation between average CBP and daytime ABP, and 4) the concordance of hypertension status. For the analysis of the hypertension status, clinic hypertension was defined as average CBP greater than the 95th percentile by criteria from the Task Force on High Blood Pressure in Children and Adolescents, and ambulatory hypertension was defined as mean daytime ABP greater than the 95th percentile from normative ABP data (Soergel et al, J. Peds. 1997:130:178-84). Comparison of the group means of average CBP and daytime ABP showed no significant differences for either SBP (125 vs. 124 mmHg) or DBP (75 vs. 74 mmHg). These results indicate that CBP does not systematically overestimate daytime ABP. However, absolute percent error of average CBP relative to daytime ABP was 6.2% for SBP and 10.0% for DBP. Further, correlations between average CBP and daytime ABP were only 0.85 for SBP (figure) and 0.60 for DBP. Among pts specifically undergoing assessment for hypertension (n=73), the concordance of hypertension status between clinic hypertension and ambulatory hypertension was 75%. None of the analyses for relative agreement between average CBP and daytime ABP showed a statistically stronger relationship compared to any single CBP measurement. These results confirm that assessment of BP in children by CBP alone is often unreliable even with multiple CBP measurements.

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