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Pediatric Cardiology

Determinants of Blood Pressure in Preschool Children

The Role of Parental Smoking

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Background—Hypertension is the leading risk factor for cardiovascular disease. Although accumulating evidence suggests tracking of blood pressure from childhood into adult life, there is little information regarding the relative contributions of genetic, prenatal, biological, behavioral, environmental, and social determinants to childhood blood pressure.

Methods and Results—Blood pressure and an array of potential anthropometric, prenatal, environmental, and familial risk factors for high blood pressure, including parental smoking habits, were determined as part of a screening project in 4236 preschool children (age 5.7±0.4 years). Smoking was reported by 28.5% of fathers and 20.7% of mothers, and by both parents 11.9%. In addition to classic risk factors such as body mass index, prematurity, low birth weight, and parental hypertension, both systolic (+1.0 [95% confidence interval, +0.5 to +1.5] mm Hg; $P=0.0001$) and diastolic blood pressure (+0.5 [+0.03 to +0.9] mm Hg; $P=0.03$) were higher in children of smoking parents. Parental smoking independently affected systolic blood pressure ($P=0.001$) even after correction for other risk factors, such as body mass index, parental hypertension, or birth weight, increasing the likelihood of having a systolic blood pressure in the top 15% of the population by 21% (2% to 44%; $P=0.02$).

Conclusions—In healthy preschool children, parental smoking is an independent risk factor for higher blood pressure, adding to other familial and environmental risk factors. Implementing smoke-free environments at home and in public places may provide a long-term cardiovascular benefit even to young children.

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