

also examined. Family history was obtained from 783 patients overall and these data were pooled.

A positive family history of stroke—defined as at least one affected first-degree relative—was significantly associated with a history of hypertension in the proband and was also related to the patient's highest-ever pre-morbid blood pressure. Similar relationships were shown for a positive family history of myocardial infarction, albeit with a weaker association with measured blood pressure.

The authors suggest that, among established intermediate phenotypes, the heritability of hypertension is the major contributor to the heritability of stroke. It will be important to bear this in mind when designing candidate gene studies in this area.

Original article Flossmann E and Rothwell PM (2005) Family history of stroke in patients with transient ischemic attack in relation to hypertension and other intermediate phenotypes. *Stroke* 36: 830–835

Cardiovascular risk factors in adolescence

Results of a recent school-based study suggest that the patterns of cardiovascular (CV) risk clusters seen in adults are mirrored during adolescence.

Researchers collected data from 1,578 healthy seventh to twelfth-grade school children regarding various CV risks including cholesterol, fasting insulin, BMI, waist circumference, and blood pressure. They carried out statistical analysis and found that there were four uncorrelated factors—adiposity, cholesterol, carbohydrate-metabolic, and blood pressure—underpinning the CV risks they had measured. Scores were assigned to each of the first three factors, and a cumulative risk scale was devised, which involved addition of the scores recorded for individual factors.

Around 11% of subjects were found to be at high risk for one of the three factors (most commonly adiposity) and almost 1% were at high risk for two factors, although nearly one-fifth of subjects found to be at high cumulative risk were not at high risk for any of the factors individually. For each of the three factors, the subject's weight was found to bear a relation

on whether they fell into the high-risk category, and obesity emerged as the leading independent correlate of CV risk, both as an individual physiological variable and in terms of high cumulative risk.

The authors conclude that the establishment of factors and risk scores in adolescents might aid our understanding of the developmental course leading to CV disease.

Original article Goodman E *et al.* (2005) Factor analysis of clustered cardiovascular risks in adolescence: obesity is the predominant correlate of risk among youth. *Circulation* 111: 1970–1977

Diet and exercise training in obese children

The increasing prevalence of childhood obesity has stimulated new research into its implications and treatment. A new study from Brazil has investigated the effects of diet and exercise on muscle vasodilatory responses and blood pressure in a group of obese children.

Thirty-nine consecutive outpatients aged 8–12 years, with a mean BMI of $29 \pm 0.3 \text{ kg/m}^2$, were randomized to a regimen of diet plus exercise ($n=21$) or to diet alone ($n=18$). Also included were 10 age-matched control children with a mean BMI of $17 \pm 0.5 \text{ kg/m}^2$.

At baseline, the obese children had significantly higher mean blood pressure than their lean counterparts; furthermore, forearm vascular conductance responses—measured during handgrip exercises and mental stress—were significantly lower in the obese group.

In addition to producing significant weight loss in the obese patients, the diet regimen was associated with decreased blood pressure during the exercise and mental stress testing. In those following the diet plus exercise regimen, blood pressure and forearm vascular conductance responses were similar to those measured in the lean children.

In summary, the study shows that obesity affects blood pressure and forearm vascular conductance responses during exercise and mental stress testing, and that diet and exercise can normalize these responses.

Original article Ribeiro MM *et al.* (2005) Diet and exercise training restore blood pressure and vasodilatory responses during physiological maneuvers in obese children. *Circulation* 111: 1915–1923