Prehypertension in young adulthood linked to coronary artery disease marker later in life

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MedWire News: People who develop prehypertension during young adulthood have an increased likelihood of coronary atherosclerosis later in life, research reveals.

Mark Pletcher (University of California, San Francisco, USA) and team prospectively studied 3560 men and women aged 18 to 30 years who were enrolled in the Coronary Artery Risk Development in Young Adults study.

Participants had their blood pressure levels measured during follow-up examinations at 2, 5, 7, 10, 15, and 20 years. They also underwent cardiac computed tomography to measure coronary calcium levels - representing calcified atherosclerotic plaque -at the 15- or 20-year follow-up.

The researchers used mixed models to estimate participants' blood pressure trajectories for each decade of life from 20 years onwards up to the time of their coronary calcium measurement. From this they calculated participants' exposure to blood pressure in the prehypertensive range (systolic blood pressure of 120 to 139 mmHg or diastolic blood pressure of 80 to 89 mmHg) in units of mmHg-years, and then looked at how exposure levels related to calcium scores.

Nearly one-fifth of the participants (n=635; 18%) developed prehypertension before the age of 35 years, the team reports in the *Annals of Internal Medicine.*

Exposure to systolic prehypertension before age 35 years was strongly associated with the presence and extent of coronary calcium levels in later life.

Compared with participants without any exposure to systolic prehypertension during young adulthood, those with a cumulative exposure greater than 30 mmHg-years were between two and three times as likely to have coronary calcium (38% versus 15%), a coronary calcium score greater than 10 (27% versus 10%), and extensive calcification with a score greater than 100 (10% versus 3%; all $p<0.001$).

Multivariable analysis confirmed that systolic prehypertension in young adulthood is a strong predictor of coronary calcium; each 1-log increase in cumulative exposure was associated with a fully adjusted odds ratio of 1.12.

Diastolic prehypertension in young adulthood was less strongly linked to coronary calcium in later life than systolic prehypertension, Pletcher and team note.

The researchers concede that blood pressure control is particularly challenging in young adults, and point out that coronary calcium is only a surrogate marker for coronary artery disease.

Nevertheless, they write: "A concerted effort to attain optimal blood pressure in early adulthood may yield substantial health benefits for individuals and reduce population rates of clinical cardiovascular disease during middle age and beyond."

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