

Presenting Author Name

Doug Houlbrook

Presenting Author Category

Non-Trainee

Research Category

Clinical

Abstract Title

Evaluation of pulse wave velocity associations with asthma, spirometry, and methacholine challenge among teenagers in the Canadian Asthma Primary Prevention Study (CAPPS)

Background

In adults, asthma diagnosis has been associated with future cardiovascular disease (CVD), examined by pulse wave velocity (PWV), a gold standard measure of aortic stiffness. In 12-year-old Study of Asthma, Genes and the Environment (SAGE) participants, PWV was slightly higher in females with a positive methacholine challenge (MCH).

Objective

We now examine associations between PWV and asthma in 15-year-old Canadian Asthma Primary Prevention Study (CAPPS) birth cohort participants, who were at high risk for allergy and asthma.

Methods

CAPPS participants had PWV measured and examination for asthma by clinical assessment, spirometry, and MCH. We used t-tests to examine PWV (m/s) for children with and without clinical asthma, with forced expiratory volume in 1 second (FEV1) below and above 80%, and with methacholine provocative challenge causing a 20% decrease in FEV1 (PC20) below and above 8 mg/mL. We also assessed covariables such as sex, weight, atopy, and age within the cohort.

Results

Of the 105 participants aged 15 years $\pm$ 8 months, 47 females (45%) and 58 males (55%) completed all measures. PWV was not associated with clinical asthma diagnosis (95% confidence interval (CI) -0.51-0.14, $p=0.26$) or FEV1 (95%CI -0.16-0.44, $p=0.33$). PWV was associated with PC20 below 8mg/mL in the full cohort (95%CI -0.52-0.02, $p=0.03$) and when examining female/male as an intervention term (95%CI -0.56--0.05, $p=0.02$), but not with including intervention terms of weight above or below the 85th percentile (95%CI -0.17-0.43, $p=0.39$), presence or absence of atopy (95%CI -0.12-0.37, $p=0.32$), or age up to 15 versus above 15 years (95%CI -0.01-0.47, $p=0.06$).

Conclusion

In these teens at high risk of asthma development, PWV was associated with a positive MCH for asthma and with inclusion of sex as an intervention term. Further evaluation of the associations between PWV and asthma is warranted, including examining the clinical significance of the observed associations.

Authors

Name	Role	Profession
Doug Houlbrook	Presenting Author	
Scarlet Deluz	Co Author	
Joanna Johnson-Audu	Co Author	
Golnaz Arbab	Co Author	
Edmond Chan	Co Author	Full Professor
Allan B. Becker	Co Author	Full Professor
Jon McGavock	Co Author	Full Professor
Elinor Simons	Co Author	Associate Professor