**The acute effect of inhaled salbutamol and ipratropium on aortic stiffness and pressure wave reflection**

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**Background:** Accurate evaluation of aortic stiffness and pressure wave reflection may improve cardiovascular risk stratification in chronic obstructive pulmonary disease. However, it is not clear whether systemic haemodynamic changes induced acutely by inhaled salbutamol and ipratropium confound these measurements.

**Aim:** To investigate the acute effect of inhaled salbutamol and ipratropium on measures of aortic stiffness (aortic pulse wave velocity/aPWV) and pressure wave reflection (central augmentation index/cAIx).

**Methods:** 27 healthy normotensive adults aged 19-24 years were recruited into a crossover study receiving inhaled salbutamol 400 micrograms or ipratropium 160 micrograms via a spacer in random order at least 24 hours apart. Spirometry, blood pressure, aPWV (carotid-femoral) and cAIx were measured at baseline, 15 mins after salbutamol and 45 mins after ipratropium administrations. aPWV and cAIx were measured using a validated system (Vicorder®).

**Results:** Salbutamol reduced cAIx from 12±5% to 8±6% (mean±SD; p<0.001) independent of changes in lung function, peripheral and central blood pressures and aPWV. Heart rate increased from 75±11 to 82±14 beats/min (p=0.001) with no association between this change and cAIx (r=-0.148; p=0.463). Ipratropium had no significant effect on any haemodynamic measurement.

**Conclusions:** Inhaled salbutamol has a significant effect on cAIx in healthy volunteers. This may be due to its actions on resistance arterioles and pressure wave reflection. If performing pulse wave analysis/pulse wave velocity with post-bronchodilator spirometry, ipratropium may be the bronchodilator of choice due to its lack of acute effect on central haemodynamics.