Powered by SphygmoCor®

Central hemodynamics and arterial health research insights

Chronic Obstructive Pulmonary Disease (COPD) Edition

75 papers and abstracts
published between 2014-2024*

Here are some of the highlights.

Vascular Biomarkers Associated with COPD | March 2018

Surrogate Markers of Cardiovascular Risk and Chronic Obstructive Pulmonary Disease

Cardiovascular disease frequently coexists with chronic obstructive pulmonary disease and contributes to mortality. A research team led by Fisk investigated 458 patients with a diagnosis of chronic obstructive pulmonary disease (COPD). The presence and severity of COPD is positively associated with increased pulse wave reflections (augmentation index), arterial stiffness (pulse wave velocity) and subclinical atherosclerosis. The results showed that COPD is an independent risk factor for cardiovascular disease. These results suggest targeting vascular biomarkers could mitigate the cardiovascular burden seen in COPD.

Read More

Link Between Pulmonary | October 2019
Function and Arterial Stiffness Progression

Does Poorer Pulmonary Function Accelerate Arterial Stiffening?

Up to 20% of the general population may exhibit impaired pulmonary function making it crucial to uncover the mechanisms that link it to cardiovascular disease. A team led by Okamoto aimed to investigate the relationship between pulmonary function and arterial stiffness progression over a 5-year period. They found that lower forced expiratory volume was associated with arterial stiffening (pulse wave velocity) and its progression over time. This supports that pulmonary function is linked to higher arterial stiffness and its progression over time, suggesting that pulmonary function is an important factor associated with arterial stiffness.

Read More

Multidisciplinary Pulmonary | November 2011
Rehabilitation Improves Vascular Health

Does pulmonary rehabilitation address cardiovascular risk factors in patients with COPD?

Integrating both physical activity and nutritional optimization, in a multidisciplinary pulmonary rehabilitation program, is associated with reducing cardiovascular risks. Gale and colleagues showed through both exercise and nutrition interventions a reduction in vascular biomarker including, central blood pressure, augmentation index and pulse wave velocity. These changes through rehabilitation lead to improved cardiovascular risk profiles. Pulmonary rehabilitation with both exercise and diet intervention appears promising in identifying and addressing cardiovascular and metabolic dysfunction in COPD patients.

Read More

As of April 2024, results from PubMed Central using "SphygmoCor" as the search term.

CONNEQT Health

Implications of Preterm Birth on Lung and | October 2012 **Cardiovascular Function**

The EPICure Study: Association Between Hemodynamics and Lung Function at 11 Years After Extremely Preterm Birth

Impaired lung function has repeatedly been demonstrated in children born preterm, independent of other pulmonary risks. Bolton and colleagues examined the association between lung function, maternal smoking, and augmentation index (AIx) in children born extremely preterm. AIx was found to be higher in preterm infants compared to term-born peers, with impaired lung function being independently associated with AIx. The study highlighted the importance of preventing chronic neonatal lung disease to reduce cardiovascular risk in preterm infants. Additionally, impaired lung function has been shown to be a key risk factor for cardiovascular disease in adults, emphasizing the long-term ramifications of preterm birth on cardiovascular health.

Read More

Longitudinal Assessment of | January 2020 **Augmentation Index in COPD**

Arterial Stiffness Increases Over Time in Relation to Lung Diffusion Capacity: A Longitudinal Observation Study in COPD

Roeder and colleagues examined 76 COPD patients to assess augmentation index (AIx) changes over a 7-year period with indicators described in cross-sectional studies. AIx significantly increased over time with association to emphysema severity, systemic inflammation, and dyslipidemia in COPD patients. The study found AIx was independently associated with cardiovascular indicators including lung function impairment, hypoxia, inflammation, and sympathetic tone. Utilizing AIx could help predict progression of cardiovascular disease in COPD patients.

Read More

Relationship of | November 2018 **Hypertension, COPD and Vascular Health**

Pulse wave velocity and other indicators of arterial stiffness in hypertension comorbidity and chronic obstructive pulmonary disease

More than 40% of COPD patients also suffer from arterial hypertension. Aksenova and colleagues aimed to evaluate aortic vascular biomarkers (central systolic blood pressure (cSBP), central pulse pressure (cPP), and pulse wave velocity (PWV)) in patients with both conditions. They found that cSBP and cPP were higher in patients with both hypertension and COPD compared to those with either condition alone. Independent factors contributing to an increase in PWV included the combination of hypertension and COPD, age, and elevated cPP and cSBP levels. Identifying various vascular phenotypes in COPD could guide targeted treatment and identify individuals at risk of vascular stiffening who might otherwise be overlooked.

Read More

Aerobic Exercise Pulmonary Rehabilitation | April 2020

Relationship between resting heart rate and arterial stiffness in patients with chronic obstructive pulmonary disease: Implications for pulmonary rehabilitation

Sima and team investigated the resting heart rate (RHR) relation to aortic vascular biomarkers, in COPD patients pre- and post- aerobic exercise pulmonary rehabilitation. The rehabilitation program lowered central pulse pressure, central blood pressure and pulse wave velocity. However, the program did not fully reduce RHR to levels observed in healthy individuals. These results indicate that aerobic exercise improves vascular health. Additional treatment following or with rehabilitation program could see complete restoration of the relationship between vascular biomarkers and RHR.

Read More