

VASCage - Research Centre on Vascular Ageing and Stroke

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A patient's arterial stiffness can easily be assessed by measurement of the pulsewave velocity.
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ON THE TRAIL OF VASCULAR AGEING

STUDY PROVIDES IMPORTANT NOVEL INSIGHTS INTO ARTERIAL STIFFENING: WOMEN HIGHLY AT RISK AFTER MENOPAUSE

VASCage sets new standards in research on arterial stiffening, a key process of vascular ageing. The results of a new study in several Chinese population cohorts of unprecedented size pave the way towards measurement of arterial stiffness in clinical routine. Arterial stiffness as assessed by the pulse-wave velocity holds a substantial promise as a prognostic factor and future therapeutic target.

Arterial stiffening is central in the vascular ageing process and has serious consequences such as systolic hypertension, heart failure, renal dysfunction, stroke and aortic aneurysms, but research into the underlying mechanisms is limited so far. Within VASCage, a unique collaboration between the Central South University in Changsha (China), the King's College London (UK) and the Medical University of Innsbruck (Austria) established lifetime trajectories of

arterial stiffening in more than 80,000 healthy subjects, the by far largest population sample studied so far. Key findings were published in the *Journal of the American College of Cardiology*, one of the leading journals in the vascular field.

In this study, arterial stiffness was estimated by measurement of the brachial-ankle pulsewave velocity, a simple and quick procedure suitable for clinical routine application. It represents the speed of the pressure wave propagating along the artery and is directly correlated to the rigidity of the vessel with a higher velocity indicating stiffer vessels.

This study had three main results: 1) Arterial stiffening already starts in young adulthood and proceeds during lifespan. Accordingly, from a preventive perspective, targeting risk factors has to

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be scheduled early in life. 2) Women have more dispensable vessels until menopause but have stiffer vessels thereafter. This observation provides an important clue of explanation for the heightened stroke risk in post-menopausal women. 3) A large number of established and emerging vascular risk factors qualified as risk factors for arterial stiffening as well with the notable exception of cholesterol. Injurious effects of these risk factors were more pronounced in women compared to men.

Prognostic risk factors and therapeutic targets

This VASCage study sets the groundwork for a future clinical use of pulsewave velocity measurements as a routine component in health checkups. This clinical translation process is currently under way and strongly supported by a COST initiative of the European Union (VascAgeNet), which joins forces with VASCage. Future studies will focus on the prognostic performance of pulse wave velocity for



Blood vessels of head and neck
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death, stroke, and cardiovascular disease. Moreover, arterial stiffness is an appealing target for preventive pharmacological and lifestyle interventions. So far, few small intervention studies aimed at improving or reversing arterial stiffness and yielded first promising results. A variety of larger studies are in preparation including a study on the potential effects of dietary spermidine on arterial stiffness launched within the framework of VASCage.

Project coordination

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- King's College London KCL, United Kingdom

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