My name is Phillip Lurz. I'm an, a cardiologist at Heart Centre Leipzig at University Leipzig.

What prompted you to conduct this study?

There's a huge proportion of patients with arterial hypertension with actually quite poor blood pressure control despite the intake of several different anti-hypertensive drugs and one alternative approach to these patients and treatment option might be a device-based therapy for arterial hypertension, which is renal denervation. And despite the fact that the latest trials are quite positive and promising, and demonstrating superiority of renal denervation as compared to a sham procedure, the non-responder rate in all of these trials was still about one third of patients. And the aim of our trial was to improve patient selection and find predictors for response and non-response to renal denervation in patients with uncontrolled hypertension.

What was the study design, endpoints, and patient population?

We looked at response to renal denervation, which was defined by a reduction in daytime systolic blood pressure on AVPM of at least five millimetres of mercury, and we applied three methods to assess arterial stiffness. Because there's some preliminary data suggesting that arterial stiffness is a good predictor for response to renal denervation, meaning that those with very high arterial stiffness might not respond as well as those with less arterial stiffness and a more preserved arterial compliance. So we assessed arterial compliance and arterial stiffness by three different methods. Invasively by calculating pulse weight velocity, that's considered to be the reference standard. Then we use the non-invasive method, the compliance system within a blood pressure tracing noninvasively with electrodes placed on the femoral artery and the carotid artery. And then the third method was magnetic resonance imaging looking again at pulse weight velocity but also on aortic distensibility as a marker for anterior stiffness.

What are the key results?

So the key results are first, we again, could confirm that invasively assessed pulse weight velocity as an estimate of arterial stiffness is a quite good predictor for response to renal denervation, but we could also show that also non-invasive measures of pulse weight velocity and arterial stiffness helped to predict a response to renal denervation, especially cardiac magnetic resonance looking at arterial distensibility. And when we combine that with some clinical data the predictive value is is quite high with an area under the curve close to 0.9.

What conclusions can be made and what are the next steps?

So the conclusion would be that arterial stiffness matters when selecting patients for renal denervation. Invasive measurement of arterial stiffness is probably the reference standard but it's less suitable as a screening and patient selection tool, and cardiac magnetic resonance might be very powerful to select those patients who benefit the most from renal denervation. And so the next steps would be to apply these methods and evaluate their role in a prospective manner.