Background: Cardiovascular (CV) and cerebrovascular (CVB) risk have not been adequately examined in the setting of patients with small vessel vasculitides. In particular, data on CV/CVB surrogate markers are scarce and the diagnostic value of traditional CV risk scores, such as the Systemic Coronary Risk Evaluation (SCORE) and ist EULAR modified version (mSCORE) is unknown.

Objectives: Aims of this study were to examine gold standard surrogates of CV risk and subclinical atherosclerosis (1), as well as novel duplex-sonographic markers of CVB risk in a cohort of patients with small vessel vasculitides. Moreover, we sought to evaluate for the first time the diagnostic value of SCORE and mSCORE in identifying patients at high CV and CVB risk.

Methods: SCORE/mSCORE and the gold standard marker of aortic stiffness (carotid-id-femoral pulse wave velocity; cfPWV) were examined in patients with small vessel vasculitides and healthy controls across 3 Rheumatology Centers. Moreover, sonography of the common- (CCA), internal- (ICA) and external- (ECA) carotid arteries was performed in subsets of both groups, evaluating carotid intima-media-thickness (cIMT), plaque presence and duplex-sonographic indices of CVB risk, such as the resistance- (Ri) and pulsatility-index (PI). Disease characteristics, clinical and serological activity markers, as well as traditional CV risk factors were also documented.

Results: We recruited 46 patients with small vessel vasculitides (granulomatosis with polyangiitis (n=33), eosinophilic granulomatosis with polyangiitis (n=6); microscopic polyangiitis (n=4); cryoglobulinemic vasculitis (n=1); urticaria vasculitis with polyangiitis (n=33); eosinophilic granulomatosis with polyangiitis (n=6), 21 (20%) were smokers and 21 (20%) were female; 17 (37%) had kidney involvement; 14 (29%) had ear-nose-throat involvement; 17 (37%) had involvement of the lower limb. According to SCORE and (EULAR)-mSCORE, 0.9% and 15.8% of the patients revealed higher CV surrogates in the patient subgroup, compared to controls.

Conclusion: Herein, we could show that patients with small vessel vasculitides had higher aortic stiffness and subclinical carotid atherosclerosis, compared to controls and could thus have higher CV and CVB risk. Moreover, we were able to demonstrate for the first time that SCORE/mSCORE performed poorly in identifying patients at high CV risk and carotid atherosclerosis compared to cfPWV and carotid sonography respectively. Thus, cfPWV and carotid sonography could improve CV and CBV screening in patients with small vessel vasculitides.