BACKGROUND: Inflammation contributes to cardiovascular complications in type 2 diabetes, which are often characterized by microvascular alterations. We investigated whether myeloid-related protein 8/14 complex (MRP8/14) secreted by transmigrating monocytes and granulocytes may represent a biomarker for microvascular alterations in patients with type 2 diabetes and nephropathy.

METHODS: MRP8/14 was measured in 43 patients with type 2 diabetes and nephropathy. Additionally, the inflammatory markers Interleukin-6 (IL-6), Tumor necrosis factor-alpha (TNF-alpha) and C-reactive protein (CRP) were quantified. To detect microvascular alterations proteinuria and retinal vessel caliber were used as classical and novel marker, respectively. Proteinuria was quantified by protein-creatinine ratio (PCR); retinal vessel caliber was quantified after retina photography on digitalized retina pictures. RESULTS: MRP8/14 was positively associated with inflammation \( (r = 0.57) \), proteinuria \( (r = 0.40) \) and retinal arterial caliber \( (r = 0.48) \). Type 2 diabetic patients with MRP8/14 values above the median of 5.8 microg/ml demonstrated higher proteinuria and larger retinal artery caliber than patients with MRP8/14 values below the median \( \text{logPCR: } -0.51 +/- 0.52 \) versus \( -0.96 +/- 0.46, P < 0.01 \); retinal
artery lumen (microm): 178.3 +/- 14.1 versus 162.7 +/- 14.9 P< 0.01). Both groups did not differ with regard to metabolic factors and blood pressure. MRP8/14 was an independent predictor of retinal artery caliper in multivariate stepwise regression analysis (β = 0.607) and was positively associated with IL-6 (r = 0.57, P< 0.001) and TNF-alpha (r = 0.36, P< 0.05). CONCLUSION: MRP8/14--a marker for transendothelial migration--describes not only the state of inflammation in diabetic nephropathy, but additionally the degree of microvascular alterations in the glomerular and retinal bed. Therefore, MRP8/14 may be a potentially selective novel biomarker for microcirculatory defects in diabetic nephropathy.