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Autor(en) des Beitrags: Pressler, A; Esefeld, K; Scherr, J; Ali, M; Hanssen, H; Kotliar, K; Lanzl, I; Halle, M; Kaemmerer, H; Schmidt-Trucksäss, A; Hager, A

Titel des Beitrags: Structural alterations of retinal arterioles in adults late after repair of aortic isthmic coarctation.

Abstract: Patients after coarctation repair still have an increased risk of cardiovascular or cerebrovascular events. This has been explained by the persisting hypertension and alterations in the peripheral vessels. However, involvement of the central vessels such as the retinal arteries is virtually unknown. A total of 34 patients after coarctation repair (22 men and 12 women; 23 to 58 years old, age range 0 to 32 years at surgical repair) and 34 nonhypertensive controls underwent structural and functional retinal vessel analysis. Using structural analysis, the vessel diameters were measured. Using functional analysis, the endothelium-dependent vessel dilation in response to flicker light stimulation was assessed. In the patients after coarctation repair, the retinal arteriolar diameter was significantly reduced compared to that of the controls (median 182 mum, first to third quartile 171 to 197; vs 197 microm, first to third quartile 193 to 206; p<0.001). These findings were independent of the peripheral blood pressure and age at intervention. No differences were found for venules. The functional analysis findings were not different between the patients and controls (maximum dilation 3.5%, first to third quartile 2.1% to 4.5% vs 3.6%, first to third quartile 2.2% to 4.3%; p = 0.81), indicating preserved autoregulative mechanisms. In conclusion, the retinal artery diameter is reduced in patients
after coarctation repair, independent of their current blood pressure level and age at intervention. As a structural marker of chronic vessel damage associated with past, current, or future hypertension, retinal arteriolar narrowing has been linked to stroke incidence. These results indicate an involvement of cerebral microcirculation in aortic coarctation, despite timely repair, and might contribute to explain the increased rate of cerebrovascular events in such patients.