

Steno-occlusive carotid artery disease

Stenoocclusive [carotid artery disease](#) causes important histomorphologic changes in all craniocervical vasculatures, such as luminal enlargement, vascular wall thinning, elongation, convolutions, and aneurysm formation in the posterior circulation. Although increased pressure, retrograde blood flow, and biochemical factors are described in the pathogenesis of vascular remodelisation, the vasoregulatory role of the autonomic nervous system has not been investigated thus far.

Eseoglu et al, investigated the relationship between the sympathetic nervous system and the severity of histomorphologic alterations of basilar arteries after bilateral common carotid artery ligation (BCCAL).

This study was conducted on 21 rabbits. The rabbits were randomly divided into three groups: baseline group (n = 5), sympathectomy non-applied group (SHAM; n = 8), and sympathectomy applied group (n = 8) before bilateral common carotid artery ligation. Permanent ligation of the prebifurcations of the common carotid arteries was performed to replicate stenoocclusive carotid artery disease. Basilar artery volumes were measured after ligation. Volumes of the basilar arteries were estimated by stereologic methods and compared between groups.

Luminal enlargement, wall thinning, elongation, convolutions, and doligoectatic configurations were detected in the majority of basilar arteries. The mean basilar arterial volume was 4.27 ± 0.22 mm³ in the baseline group; 5.28 ± 0.67 mm³ in the SHAM group, and 8.84 ± 0.78 mm³ in the study group. The severity of basilar enlargement was significantly higher in the study group compared with the SHAM ($p < 0.005$) and baseline groups ($p < 0.001$).

Sympathectomy causes basilar artery enlargement, which is beneficial for maintaining cerebral blood flow; however, it also causes wall thinning, elongation, convolution, and aneurysm formation, which may be hazardous in stenoocclusive carotid artery disease. Sympathectomy can prevent new vessel formation and hyperthyrophic changes at the posterior circulation. Neovascularisation is not detected adequately in sympathectomised animals ¹⁾.

¹⁾

Eseoglu M, Yilmaz I, Karalar M, Aydin MD, Kayaci S, Gundogdu C, Gunaldi O, Onen MR. The role of sympathectomy on the regulation of basilar artery volume changes in stenoocclusive carotid artery modeling after bilateral common carotid artery ligation: an animal model. Acta Neurochir (Wien). 2014 Feb 21. [Epub ahead of print] PubMed PMID: 24557449.

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