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Prognostic significance of intimal thickenings in the pathogenesis of cerebral circulation disorders

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Objective: To establish the histological and morphometric features of the human cerebral arterial circle as significant for cerebral circulation disorders development.

Methods: The places of Willis circle vessels bifurcation were studied on 120 human brain preparations after staining with hematoxylin and eosin, Van-Gizon, orcein by Uann-Terzen, Sudan and with immunohistochemistry.

Results: Reconstruction of cerebral vessels walls was determined inner layer growth (intimate thickenings), gradual thinning the middle layer till complete disappearance (p<0.05). The intimate thickenings growth was represented by 3 periods: (1) Formation (2-21 years); (2) slow growth (22-55 years); and (3) rapid growth (after 56 years). The medial layer in the first period of mature age (22-35 years) thinned by 53%; in the second period (36-55 years) by 59% and in the elderly age (56-74 years) by 79% or it was absent at all, that contribute to protrusion of the apical angle wall. Intimate thickenings were undergone an age-related reconstruction caused by atherogenesis (appearance of lipid inclusions, moderate expression of Ki-67 protein).

Conclusion: The histological and morphological features of human intimal thickenings were revealed. The following periods were distinguished as the crucial for cerebral circulation disorders development: The 1st period (30-35 years) - the medial layer thickness in branching vessel decreased significantly, that might contribute to the aneurysm formation; the 2nd period (after 56 years) - there was a significant increase in the height of intimal thickenings, that could lead to the vascular stenosis.

Biography

Nataliya Huseva is currently working at Belarusian State Medical University, Belarus.

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