THE BRAIN IN HYPERTENSION

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The association between early morning hypertension and stroke related dementia in the elderly
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Background: Hypertension (HT) in the elderly is associated with increase occurrence rate of dementia.

Purpose: We evaluated the prevalence of the pattern of high blood pressure and effects of arterial stiffness, pulse wave velocity (PWV) and wave reflections on central aortic pressure (CAP) in hypertensive patients with dementia.

Methods: We analyzed a total 450 hypertensive patients with dementia, investigated using 24hr ambulatory blood pressure monitoring (ABPM). Among the HT, classified as early morning hypertension (EMHT) (early morning BP: above 135/85 mmHg and night-time BP: below 120/70 mmHg), Night HT (NHT) (Day-time BP: below 135/85 mmHg and night-time BP: above 120/70 mmHg). And using radial artery anpplanation tonometry, aortic pulse analysis was performed.

Results: 128 patients were observed HT with stroke related dementia. EMHT was found in 55.6% of patients (n=71). Compared with patients with both EMHT and NHT, EMHT had higher aortic pulse wave velocity (PWV) and augmentation index (AI) and AI75 (AI to HR 75 beat/min), ARP (Central aortic systolic pressure) and pulse pressure were also higher in the EMHT.

Conclusion: Our study showed that EMHT could have increased stroke related dementia and especial, early morning systolic BP might be risk factor for cognitive decline. Hence active anti-hypertension treatment benefits in dementia prevention.

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Is acoustocerebrography a new noninvasive method for early detection of the brain changes in patients with hypertension?

Background: Hypertension (HT) is the leading cause of global disease burden and overall health loss. The brain is one of the main target organs affected by HT. HT is a potentially modifiable risk factor for the development of hypotension in later life. This suggests that hypertension are present in early life. One proposed mechanism, termed the selfish brain hypothesis, is that as a consequence of impaired cerebral blood flow sympathetic activity is elevated to raise blood pressure (BP). Our data shows that variations in the anatomy of the posterior cerebral vascular territory, an incomplete posterior circle of Willis (CoW) and vertebral artery hypoplasia (VAH), cause cerebral hypoperfusion in middle-aged adults with hypertension. However, whether these variants are present from a young age and are causal to the development of hypertension remains unknown.

Purpose: To examine whether young adults with hypertension have a higher prevalence of vertebral artery hypoplasia and/or an incomplete posterior circle of Willis compared to age-matched normotensives.

Methods: We performed a retrospective analysis of all patients under the age of 40 years seen in our specialist hypertension clinic between November 2011 and June 2016. Using Magnetic Resonance Imaging (MRI) 3D time-of-flight magnetic resonance angiography was completed at 1.5T. Images were reviewed by a single radiologist for the presence of incomplete posterior CoW and/or VAH. A control group of age matched normotensive individuals was identified from a previous study. Prevalence of variants in the two groups were compared using Fishers exact test. Data are reported as mean ± standard deviation.

Results: 53 hypertensive young adults (20 women) and 22 age-matched controls (11 women) were identified. The groups were well matched for age with a mean of 30±4.9 years in the normotensive group and 29±4.5 in the control group (p=0.5). BMI was lower in the control group, mean 24.1, compared to 28.9 in hypertensives (p=0.0026). Mean clinic blood pressure was 144/91 mmHg (± 16.6/11) compared to 122/74 mmHg (± 10.6/6.4) in the control group (p=0.0001). VAH was identified in 18 (33%) patients in the hypertensive group compared to 4 (18.2%) in the control group (P=0.18). Incomplete posterior CoW was seen in 35 (66%) hypertensives and 9 (40.9%) normotensives (p=0.07). The overall prevalence of either variant was higher in the hypertensive group at 41 (77.4%) than the control group at 11 (50%) (P=0.028).

Conclusion: These data show a higher prevalence of cerebrovascular variants in young adults with hypertension. A longitudinal study is warranted to explore the significance of these abnormalities relative to development of hypertension. With recent studies pointing towards the benefits of lower blood pressure targets the findings herein could become an important consideration in view of their proposed effects on cerebral blood flow.

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Cognitive disorders in children and adolescents with hypertension

Background: Today the problem of cognitive alterations is poorly studied in connection with hypertension in children and adolescents whose causes are often vascular and brain damages are present or damages are mild but there are signs of cognitive disorders we can detect.

Aim: To characterize peculiarities of cognitive disorders development in children and adolescents with hypertension.

Methods: We conducted neuropsychological research involving 195 people (15±1.4) who were divided into two groups – main and control. The main group included 98 patients with hypertension (59 boys and 39 girls, 15±1.5). The control group included 97 children (60 boys and 37 girls, 14.9±1.3) with normal level of blood pressure. We estimated the state of voluntary attention, speech, verbal and visuospatial memory with the help of A.R. Luria’s test battery.

Results: Most of the children and adolescents with hypertension were noticed to...