

## Pathological Study of Intracranial Artery Atherosclerosis in 7307 Autopsy Cases

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**Introduction:** It has not been analyzed whether atherosclerotic changes in the major cerebral arteries differ with age or with era of birth. **Hypothesis:** To examine our hypothesis that such changes would vary with age at death and era of birth, we studied chronological changes in intracranial artery atherosclerosis in consecutive autopsy cases. **Methods:** We analyzed 7307 autopsy cases of our brain bank from 1972 to 2014. Severity of atherosclerosis was classified on the following semi-quantitative scale based on pathological observation of each artery after formalin fixation: 0 = no stenosis; 0.5 = fatty streaks but no stenosis; 1 = less than 50% stenosis; 2 = 50% to 90% stenosis; 3 = 90% or more stenosis. We scored the cerebral arteries (anterior, middle, and posterior) and vertebral arteries bilaterally and the basilar artery. Then we summed the scores in each patient and defined the sum as the atherosclerosis score. We compared atherosclerosis scores by age at death and era of birth. **Results:** Atherosclerosis scores increased with age at death, as follows: age 50s,  $1.9 \pm 3.8$ ; 60s,  $4.6 \pm 5.2$ ; 70s,  $6.1 \pm 5.3$ ; 80s,  $7.6 \pm 5.4$ ; 90s,  $8.2 \pm 5.3$ ; and 100s,  $9.2 \pm 5.3$  (mean  $\pm$  SD,  $P < 0.0001$ ). The percentage of cases with a score of 2 or 3 in each artery also increased with age ( $P < 0.0001$ ). Interestingly, in each age group (from the 60s to 90s) at the time of death, the score declined as the birth year became later (Figure.  $P < 0.0001$ , box plots for each group showing atherosclerosis score). **Conclusions:** Our analysis from a brain bank cohort showed that intracranial artery atherosclerosis 1) advanced with age, and 2) was more severe in subjects born earlier.