51.2% [ARIC]; ≥80 year-olds: 82.6% [BLSA] and 74.2% [ARIC]), followed by vision loss and olfactory loss. Hearing and vision impairments were more prevalent than hearing and olfactory losses as well as vision and olfactory losses in both age groups and studies There were few people with deficits in all three senses (70-79 year-olds: 3.3% [BLSA] and 2.0% [ARIC]; ≥80 year-olds: 5.8% [BLSA] and 7.4% [ARIC]). Further research should investigate the potential impact of multisensory impairments on older adults.

USING GENETIC INFORMATION TO EXPLORE WHETHER PRECLINICAL ALZHEIMER'S DISEASE AFFECTS HEARING DIFFICULTY

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Underlying AD-related neurodegeneration or shared risk factors may influence hearing loss; in an innovative approach we tested whether genetic risk for AD also influences functional hearing loss. We studied 401,084 UK Biobank participants aged 40-70, with Caucasian genetic ancestry, and enrolled 2007-2010. Participants self-reported hearing difficulty and were followed for AD diagnosis until 2018. A genetic risk score for AD (AD-GRS) was calculated as a weighted sum of 23 AD risk variants. In age-, sex-, and genetic ancestry- adjusted models higher AD-GRS was associated with problem hearing in ages 60+(OR= 1.03; 95%CI:1.00, 1.05), but not ages <60 (p>0.05). Using the AD-GRS as an instrumental variable for AD diagnosis, we estimated that incipient AD increased probability of difficulty hearing at enrollment by 45% (95%CI: 1%, 93%). Higher AD-GRS was associated with slightly higher odds of hearing difficulty in older adults. Genetics that predispose for AD also influence late-life hearing difficulty.

RETINAL MICROVASCULAR HEALTH: CAN THE EYE TELL US ABOUT THE BRAIN?

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Cognitive impairment caused by Alzheimer's and other dementias is linked to vascular damage in the brain. Early microvascular changes in the brain are difficult to detect but in the retina, they can potentially be seen using optical coherence tomographic angiography. In cross-sectional analysis, associations between retinal vessel density (VD) and cognitive performance were assessed by regression analysis of cognitive function z-scores (for global function as well as language, memory and executive function domains) on VD, controlling for age, race and education. Among 177 participants without dementia (50% black; 67% female; mean age 78 years [range: 71-93 years]), the mean (SD) superficial vascular complex VD was 48.0% (7.2). Among the 191 eyes without eye disease, there were no significant associations of VD with global or domain specific cognitive function. Early changes in the eye related to systemic disease processes may not currently be detectable in healthy older adults with imaging data.

HEARING LOSS AND COGNITIVE DECLINE: CAUSAL EVIDENCE

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Age-related hearing loss (HL) has recently been associated with cognitive decline, dementia, and changes in brain structure. HL has near universal prevalence in later life (involving 80% of those over 80 years old) and is rarely treated (under 20% in the same age group). Dementia is also common in later life, carrying staggering societal implications, including a worldwide cost of over $605 billion/year. Research establishing an association between HL and cognition has included cross-sectional and prospective studies. New data show a link not only in the earliest stages of HL but also in hearing ranges still considered normal. The current evidence for an independent association between HL and impaired cognition, including a possible causal connection, will be reviewed. Plausible mechanistic pathways will be discussed with an emphasis on brain imaging biomarkers of dementia. Finally, future avenues for research and policy change will be proposed.

DUAL SENSORY IMPAIRMENT AND COGNITIVE PERFORMANCE, MCI, AND DEMENTIA IN OLDER ADULTS: THE ARIC NEUROCOGNITIVE STUDY

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