FPIN's Help Desk Answers

Falls and Death in Dual Sensory Impairment

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Clinical Question

Does impairment in vision, hearing, or both increase the risk of falls or death in older adults?

Evidence-Based Answer

Dual sensory (vision and hearing) impairment in patients older than 65 years may be associated with an increased mortality risk.

Evidence Summary

A 2020 prospective cohort study (n = 37,076) examined the association between sensory impairment and all-cause mortality.[1] Patients were 70 years and older, registered in the Chinese Longitudinal Healthy Longevity Survey, and were followed from 1998 to 2019. Patients were assigned to one of four categories, based on a 1-m visual acuity test and a conversational self-report assessment: vision impairment, hearing impairment, dual sensory impairment, or no impairment. The primary outcome was the age at death, which was reported by a family interview. Compared with nonimpaired individuals, there was a higher risk of death in the vision-impaired group (hazard ratio [HR] = 1.2; 95% CI, 1.15 to 1.24), the hearing-impaired group (HR = 1.3; 95% CI, 1.2 to 1.3), and the dual sensory–impaired group (HR = 1.5; 95% CI, 1.4 to 1.5). However, the study was limited by the subjective definition of sensory impairment, possible confounding of cognitive impairment (which was not assessed), and subjective reporting for deaths that occurred at home.

Another 2020 prospective cohort study (n = 8,788) also examined the association between sensory impairment and all-cause mortality.[2] Patients were 80 years and older, registered in the Chinese Longitudinal Healthy Longevity Survey, and were followed from 1998 to 2014. In all participants, baseline hearing and vision were measured. Patients were classified into four sensory impairment groups based on a semiquantitative visual acuity test and a conversational self-report assessment: no impairment, vision impairment, hearing impairment, and dual sensory impairment. The primary outcome assessed was mortality. Compared with patients who were not sensory impaired, those who had vision impairment (HR = 1.1; 95% CI, 1.0 to 1.2), hearing impairment (HR = 1.42; 95% CI, 1.3 to 1.5), and dual sensory impairment (HR = 1.2; 95% CI, 1.1 to 1.4) had a significantly higher risk of mortality when controlled for socioeconomic variables. The study was limited by survival bias and a lack of direct causality between sensory impairment and mortality.

A 2016 cohort study (n = 1,754) assessed the association between vision and hearing impairment, cognitive impairment, and mortality among long-term care recipients.[3] The primary outcome was a five-year incidence of falls, assessed annually by self-report as two or more falls, one fall, or no falls during the past 12 months. Participants were 65 years and older, registered in the Gujo City Long-term Care Insurance Database in Japan, and were followed for an average of 4.7 years. The Mini-Mental State Examination was used to evaluate vision and hearing impairments. Vision impairment was measured using a 1-m visual acuity chart, and hearing impairment was measured by the self-reported ability to hear conversation according to five categories, ranging from normal hearing to barely able to hear. Cognitive performance was assessed based on communication or cognition and problem behaviors using functional assessment measures.

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A total of 320 participants (18.2%) had dual sensory impairment. Among patients who had a fall, cognitive impairment was more likely in those with dual sensory impairment vs. those with normal sensory function (odds ratio [OR] = 2.0; 95% CI, 1.5 to 2.7). Patients with dual sensory and cognitive impairment had an increased mortality risk compared with those who had normal sensory function (HR = 1.3; 95% CI, 1.0 to 1.7). The study was limited by poor generalizability, potential clinically significant differences within the baseline population (e.g., more men had serious diseases compared with women), and a lack of objective assessment of impairment.

A 2016 population-based cohort study (n = 1,478) examined the relationship between dual sensory impairment and the incidence of falls.[4] Participants were men and women 55 years and older from the Blue Mountains in Australia and were vision or hearing impaired. A 1-m visual acuity test measured vision impairment; hearing impairment was determined using an audiometric hearing test and the Hearing Handicap Inventory for the Elderly (a 10-item self-report questionnaire, with a score of 0 = no impairment and 40 = maximal impairment). The primary outcome was the incidence of falls, assessed once by self-report as two or more falls, one fall, or no falls during the past five years. The association between sensory impairment and falls was assessed via logistic regression. Participants with self-reported hearing impairment had a nonsignificant increase in the risk of falls compared with those with no sensory impairment (OR = 1.9; 95% Cl, 1.0 to 3.6). Patients with dual sensory impairment had a nonsignificant increase in the risk of falls compared with patients without sensory loss (OR = 2.2; 95% CI, 1.0 to 4.7). This study was limited by potential recall bias and confounding by unmeasured variables.

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