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ASSOCIATION OF AGE-RELATED MACULAR DEGENERATION ON ALZHEIMER OR PARKINSON DISEASE

Oral

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Purpose:

To determine the association of age-related macular degeneration (AMD) with Alzheimer disease (AD) and Parkinson disease (PD).

Methods:

The study population consisted of 308,340 participants aged 50 years or older from the Korean National Health Insurance Service-Health Screening Cohort. After exclusion of participants with AMD during 2002, participants were detected for AMD during 2003-2005. Starting from January 1, 2006, all participants were followed up for AD and PD until December 31, 2013. Multivariate Cox proportional hazards regression was used to calculate the adjusted hazard ratios (aHRs) and 95% confidence intervals (CIs) for AD and PD risk.

Results:

Compared to non-AMD participants, AMD patients had higher risk for AD (aHR 1.48) and PD (aHR 1.46). The risk-increasing association of AMD with AD (aHR 2.25, 95% CI 1.39-3.66) and PD (aHR 2.02, 95% CI 1.00-4.08) were preserved among participants who were never-smokers, did not consume alcohol, and exercised regularly. Finally, AMD was associated with higher risk of AD (aHR 1.96, 95% CI 1.46-2.65 for age <70 years and aHR 1.53, 95% CI 1.26-1.86 for age ≥70 years) and PD (aHR 1.90, 95% CI 1.29-2.80 for age <70 years and aHR 1.47, 95% CI 1.06-2.04 for age ≥70 years).

Conclusions:

Compared to non-AMD participants, AMD patients had higher risk for AD and PD even among those with healthy lifestyle behaviors. Patients with AMD must be closely monitored for possible subsequent development of AD or PD.

Table 2. Hazard Ratios for Alzheimer Disease and Parkinson Disease According to Age-Related Macular Degeneration

Outcome	Without AMD	With AMD
Alzheimer disease		
Events	7,308	149
Person-years	2,319,449	15,710
aHR (95% CI)	1.00 (reference)	1.48 (1.25-1.74)
Parkinson disease		
Events	3,487	63
Person-years	2,341,484	16,164
aHR (95% CI)	1.00 (reference)	1.46 (1.14-1.88)

Table 3. Sensitivity Analysis on the Association of Age-Related Macular Degeneration With Alzheimer Disease and Parkinson Disease Among Participants With Healthy Lifestyle Behaviors

Outcome	Adjusted Hazard Ratio (95% Confidence Interval)	
	Without AMD	With AMD
Alzheimer disease		
Never-smokers	1.00 (reference)	1.57 (1.33-1.87)
Non–alcohol drinkers	1.00 (reference)	1.50 (1.25-1.79)
Regular exercise[a]	1.00 (reference)	1.79 (1.15-2.79)
Healthy lifestyle behaviors[b]	1.00 (reference)	2.25 (1.39-3.66)
Parkinson disease		
Never-smokers	1.00 (reference)	1.41 (1.07-1.86)
Non–alcohol drinkers	1.00 (reference)	1.44 (1.09-1.90)
Regular exercise[a]	1.00 (reference)	1.87 (1.02-3.40)
Healthy lifestyle behaviors[b]	1.00 (reference)	2.02 (1.00-4.08)

Table 4. Sensitivity and Stratified Analyses on the Association of Age-Related Macular Degeneration With Alzheimer Disease and Parkinson Disease After Excluding Participants Diagnosed With Alzheimer Disease or Parkinson Disease Within the First 3 Years of Follow-up and According to Age Group

Analysis	Adjusted Hazard Ratio (95% Confidence Interval)	
	AD	PD
Washout period		
1 year	1.47 (1.24-1.73)	1.49 (1.15-1.94)
2 years	1.48 (1.25-1.77)	1.61 (1.23-2.10)
3 years	1.48 (1.25-1.77)	1.61 (1.23-2.10)
Age, years		
<70	1.96 (1.46-2.65)	1.90 (1.29-2.80)
≥70	1.53 (1.26-1.86)	1.47 (1.06-2.04)