

Prevalence of AMD in Whites, Blacks, Hispanics and Chinese

Data for this study were taken from the second examination of the Multi-Ethnic Study of Atherosclerosis.

BY CONNI BERGMANN KOURY, EDITOR-IN-CHIEF

There was a low prevalence of age-related macular degeneration (AMD) in the Multi-Ethnic Study of Atherosclerosis (MESA) in all ethnic groups; a lower prevalence of AMD was found in blacks compared with whites. The investigators, reporting in *Ophthalmology*, said that the higher prevalence of exudative AMD in the Chinese population needs further study.

Ronald Klein, MD, MPH; and Barbara E.K. Klein, MD, MPH, from the department of ophthalmology and visual science at the University of Wisconsin, and colleagues, described the prevalence of AMD in four ethnicities. Their evaluation using the MESA cohort included 6,176 patients aged 45 to 85 years from six US communities. MESA is a longitudinal National Heart, Lung, and Blood Institute initiative to identify risk factors for subclinical atherosclerosis, and for transition from subclinical disease to clinically apparent events.

"AMD is an important cause of visual loss in white persons 65 years or older in the United States. Data from population-based epidemiological studies have shown significant variation in the prevalence of neovascular AMD and geographic atrophy among different racial/ethnic groups," wrote Dr. R. Klein. "Based on clinical observations, non-Hispanic whites have been thought to have a higher frequency of neovascular AMD than non-Hispanic blacks."

WHITE PATIENTS HAVE MORE AMD

This statement has been confirmed in recent population-based studies. While the prevalence of neovascular

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AMD was lower in blacks than in whites, neovascular AMD is not uncommon in blacks, the authors wrote. These observations may be somewhat paradoxical, however, because the frequency of early signs of AMD, including large soft drusen and pigmentary abnormalities, were observed at similar rates in blacks and whites.

In the current MESA study, fundus photos were taken using a 45° digital camera through dark-adapted pupils and were graded for drusen size, type, area, increased retinal pigment, retinal pigment epithelial depigmentation, neovascular lesions and geographic atrophy using the modified Wisconsin Age-Related Maculopathy Grading System.

The investigators used AMD as the main outcome measure.

PREVALENCE BY ETHNICITY

The prevalence of AMD was 2.4% in blacks, 4.2% in Hispanics, 4.6% in Chinese and 5.4% in whites ($P < .001$ for any differences among groups), the researchers said. The highest prevalence of AMD in any group occurred in those aged 75 to 84 years, varying from 7.4% in blacks to 15.8% in whites and Chinese ($P = .03$). "The estimated prevalence of late AMD was 0.3% (black) 0.2% (Hispanic),

0.6% (white) and 1% (Chinese)," wrote Dr. R. Klein.

These differences were marginally significant after adjusting for age and gender ($P=.08$).

The frequency of exudative AMD was the highest in Chinese compared with whites (age- and gender-adjusted odds ratio 4.30; 95% CI, 1.30-14.27). This variability among the four ethnicities was not explained by differences in age, gender, pupil size, body mass index, smoking, alcohol use history, diabetes or hypertension status, Drs. Klein and colleagues noted.

Although a low prevalence of AMD was found in the MESA cohort, the higher prevalence of exudative AMD in Chinese population deserves further study. There was a lower prevalence of AMD among blacks compared with whites.

HYPOTHESES FOR DIFFERENCES

The reason for the observation of higher AMD rates in the Chinese is unclear. "One possibility is that polypoidal choroidopathy, a disease with fundus features of neovascular AMD and without drusen or retinal pigment changes, may be more common in Asians, although this is yet to be proven," the investigators wrote. "Second, the prevalence of myopia (and high myopia) is higher in Chinese, and myopic maculopathy changes may mimic exudative AMD. Therefore, it is possible that the higher prevalence of exudative maculopathy in Chinese may be a result of a higher prevalence of myopic macular degeneration in this racial/ethnic group."

It is possible that phenotypic characteristics of AMD are different in Chinese people, perhaps related to racial differences in susceptibility genes for AMD.

The fact that AMD appears to be more frequent in Chinese than in whites requires further confirmation and study. ■

TABLE 1. RELATION OF AMD TO ETHNICITY VERSUS WHITES IN MESA (VISIT 2, 2002 TO 2004)

Outcome	Ethnicity*	OR	P	OR	P
Early AMD	blacks	0.43	<.001	0.45	<.001
	Chinese	0.74	.18	0.76	.24
	Hispanics	0.82	.26	0.88	.48
large drusen	blacks	0.72	.006	0.74	.01
	Chinese	1.31	.05	1.36	.03
	Hispanics	1.01	.92	1.09	.49
soft drusen	blacks	0.76	.05	0.78	.01
	Chinese	1.66	<.001	1.75	<.001
	Hispanics	1.06	.58	1.13	.22
soft indistinct drusen	blacks	0.35	<.001	0.37	<.001
	Chinese	0.76	.32	0.78	.38
	Hispanics	0.96	.83	1.05	.81
drusen area $\geq 500 \mu\text{m}$	blacks	0.53	.003	0.57	.009
	Chinese	0.87	.58	0.92	.73
	Hispanics	0.62	.03	0.68	.08
increased retinal pigment	blacks	0.21	<.001	0.22	<.001
	Chinese	0.33	.002	0.34	.002
	Hispanics	0.35	<.001	0.37	<.001
RPE depigmentation	blacks	0.12	<.001	0.13	<.001
	Chinese	0.75	.47	0.77	.51
	Hispanics	0.31	.008	0.34	.01
Late AMD	blacks	0.45	.16	0.52	.25
	Chinese	1.79	.22	1.91	.17
	Hispanics	0.42	.17	0.48	.26
geography atrophy	blacks	0.29	.11	0.34	.17
	Chinese	0.99	.99	1.05	.94
	Hispanics	0.18	.10	0.21	.14
exudative AMD	blacks	0.87	.85	1.02	.98
	Chinese	4.00	.02	4.30	.02
	Hispanics	0.72	.70	0.83	.83
Any AMD	blacks	0.43	<.001	0.45	<.001
	Chinese	0.85	.42	0.87	.51
	Hispanic	0.78	.14	0.85	.33

*Reference group is whites.

Source: *Ophthalmology*. 2006;113:373-380.

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Klein R, Klein BEK, Knudtson MD, et al. Prevalence of age-related macular degeneration in 4 racial/ethnic groups in the multi-ethnic study of atherosclerosis. *Ophthalmology*. 2006;113:373-380.