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Systemic Inflammation Might Explain Higher AF Risk in Whites

Pam Harrison | August 25, 2015

SAN FRANCISCO, CA — White race is associated with a substantially higher risk of incident atrial fibrillation (AF) compared with blacks, and systemic inflammation contributes to a significant proportion of that heightened risk, the Health ABC (Health, Aging and Body Composition) study, published in the August 2015 issue of *JACC: Clinical Electrophysiology,* suggests[1].

"Even though AF is the most common arrhythmia, we still don't really understand why people get it. We know what certain risk factors are, but the root cause of it remains unknown," Dr Gregory Marcus (University of California, San Francisco), told **heart*wire*** from Medscape.

"And when we talk about prevention of heart disease, we typically think about cholesterol and preventing heart attacks, but we don't tend to think about preventing AF, and I think that's in large part because we don't understand the underlying mechanisms," he said.

"So we need to do a better job at understanding other risk factors for AF and identify new ones that might point to novel targets for either therapy or prevention."

The Health ABC study was a population-based cohort study sponsored by the National Institute on Aging (NIA).

For the current analysis, 2768 white and black participants between 70 and 79 years of age were recruited from a random sample of Medicare beneficiaries residing in Pittsburgh, PA and Memphis, TN in 1997 and 1998.

At the baseline study visit, investigators measured nine inflammatory markers as part of the Health ABC protocol, and all participants underwent electrocardiography. Participants had yearly clinic visits.

New AF developed in 721 participants over a median of 11 years.

"After controlling for known AF risk factors, white race remained associated with a 55% increase in AF risk (hazard ratio [HR] 1.55; 95% CI 1.30–1.84; $P<0.001$)," lead author Dr Thomas Dewland (University of California) and colleagues report.

Furthermore, white participants had significantly higher levels of a number of inflammatory cytokines, including serum adiponectin, interleukin 6 soluble receptor (IL-6 SR), IL-2 SR, tumor necrosis factor alpha (TNF-α), TNF-α SR I, and TNF-α SR II, compared with blacks.

"To be considered a potential mediator of the race-AF association, a candidate cytokine was required to have a significantly higher concentration among whites and a significant association with AF after adjustment for race and other risk factors," investigators note.

Adiponectin, TNF-α, TNF-α SR I, and TNF-α SR II met each of these criteria, they add. And when these four cytokines were included in the multivariate race-AF model, the proportion of the race-AF relationship explained by racial differences in cytokine concentrations was 42.2% (95% CI 15.2–118.9, $P=0.004$).

Substantially Divergent Risk

As Marcus pointed out, their initial hypothesis was that there would be more inflammation in whites and that the inflammation would be caused by having more visceral fat, of which whites typically have more than blacks.

Indeed, whites in the study did have a significantly higher mean abdominal visceral-adiposity area than blacks, at 153 vs 130 cm^2, respectively ($P<0.001$). Blacks in turn had a significantly higher mean subcutaneous-fat area than whites, at 314 vs 267 cm^2, respectively ($P<0.0001$).

"But we were surprised to find that visceral fat did not explain the difference we observed in inflammation," Marcus said.

"So I think this is useful in likely excluding visceral fat as the reason for the inflammation, but that still leaves the ultimate reason to be somewhat of a mystery as to why inflammation is arising," Marcus said.

"I am becoming more and more convinced that it's going to be important to identify certain mechanistic subtypes of AF and not to think about AF as all one disease," he observed. "So for example, it may be that some patients have a proinflammatory subtype of AF. . . . It's in those people that strategies addressing inflammation will be especially important."

The study was supported by grants from the American Heart Association, Joseph Drown Foundation, National Institutes of Health Intramural Research Program, and NIA. The authors had no relevant financial relationships.

References

1. Dewland TA, Vittinghoff E, Harris TB, et al. Inflammation as a mediator of the association between race and atrial fibrillation. Results from the Health ABC Study (Health, Aging, and Body Composition). *JACC: Clin Electrophysiol* 2015; 1:248-255. Abstract

Cite this article: Systemic Inflammation Might Explain Higher AF Risk in Whites. *Medscape*. Aug 25, 2015.