Having first-degree relative with atrial fibrillation linked with increased risk

November 14 2010

An examination of the heritability of atrial fibrillation (AF) among more than 4,000 participants in the Framingham Heart Study finds the occurrence of AF in first-degree relatives was associated with AF risk after adjustment for established AF risk factors and AF-related genetic variants, according to a study that will appear in the November 24 issue of *JAMA*. The study is being released early online because it will be presented at the American Heart Association's annual meeting.

"A heritable component underlying atrial fibrillation has been well demonstrated, and it is now evident that genetic variants are associated with AF risk," the investigators write. However, the contribution of familial AF (defined in this study as the occurrence of AF in a first-degree relative prior to an examination commencing an 8-year follow-up period) to predicting new-onset AF remains unknown.

Steven A. Lubitz, M.D., M.P.H., of the Cardiovascular Research Center, Massachusetts General Hospital, Charlestown, Mass., and colleagues examined the association between AF occurrence in a first-degree relative and AF risk and hypothesized that considering familial AF would improve prediction of new-onset AF. Participants were from the Framingham Heart Study, a prospective community-based cohort study started in 1948. Original and offspring participants were at least 30 years of age, free of AF at the beginning of the study, and had at least 1 parent or sibling enrolled in the study. The 4,421 participants in this analysis (average age, 54 years; 54 percent women) were followed up through December 2007.

During the period 1968-2007, 440 participants developed AF. Familial AF occurred among 1,185 participants (26.8 percent) and premature familial AF (onset 65 years of age or younger) occurred among 351 participants (7.9 percent). Of the 2,393 baseline examinations at which familial AF was present, sources included fathers (n = 1,163), mothers (n = 1,068), and siblings (n = 404). Among participants with familial AF, the number of affected relatives ranged from 1 to 5.

The researchers found that AF occurred more frequently (approximately 40 percent increased risk) among participants with familial AF than without familial AF (unadjusted absolute event rates of 5.8 percent and 3.1 percent, respectively). The association was not weakened by adjustment for AF risk factors or reported AF-related genetic variants. Atrial fibrillation risk was associated with increasing number of affected first-degree relatives.

Assessment of premature familial AF was associated with a very slight increase in predictive accuracy compared with traditional risk factors.

"Future efforts should attempt to discern the factors that mediate the association between familial AF and AF risk, further explore the relationships between premature familial AF and risk prediction, and determine whether incorporating genetic variants into an AF prediction model enhances its performance," the authors conclude.

More information: *JAMA*. 2010;304[20]:doi:10.1001/jama.2010.1690

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