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 Arrhythmias and Clinical EP**SHORTENED TELOMERE LENGTH IS ASSOCIATED WITH ATRIAL FIBRILLATION IN OLDER CARDIOVASCULAR PATIENTS REFERRED FOR ANGIOGRAPHY**

Poster Contributions

Hall C

Monday, March 31, 2014, 9:45 a.m.-10:30 a.m.

Session Title: Arrhythmias and Clinical EP: New Observations on Pathophysiology of Atrial Fibrillation

Abstract Category: 4. Arrhythmias and Clinical EP: AF/SVT

Presentation Number: 1256-113

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Background: Telomeres are hexanucleotide repeats at chromosome ends that, in combination with telomere-associated proteins, prevent chromosome degradation during replication. Telomere length (TL) is a correlate of biological age and has been associated with risk for age-associated diseases and with longevity. Decreasing TL may underlie some pathologic conditions that occur with increasing age. Atrial fibrillation (AF) and AF-associated stroke risk rise dramatically after age 55, with prevalence >17% for those >85 years of age. Because of age relatedness of both AF and telomere shortening, we tested for associations between TL and history of AF among patients (pts) referred for coronary angiography.

Methods: Peripheral blood DNA was obtained from consenting pts (n=3576) at angiography, and TL measured in triplicate by monochrome (SYBR Green I) multiplex quantitative PCR (Bio-Rad CFX384 Detection System) and normalized to a quantitatively-measured, single-copy gene (albumin) in the same reaction. TL is reported as t/s, the normalized ratio of telomere to single gene measurements. Pt information was extracted from Intermountain Healthcare's electronic records database; history of AF was determined by discharge ICD-9.

Results: Of the 3576 subjects 63.8% were male and 91.3% Caucasian; mean age= 63 years. A total of 379 (10.6%) had a history of AF. TL was significantly associated with age ($p<0.0001$) and the presence of cardiovascular disease ($p<0.0001$). Subjects with a history of AF had shorter telomeres (mean t/s = 0.87 ± 0.29) compared to subjects without AF (mean t/s = 0.95 ± 0.32) ($p<0.0001$). This remained significant after adjusting for age ($p=0.0165$). Further adjustment for cardiovascular factors known to be associated with history of AF (i.e. stroke, percutaneous coronary intervention, statin use, and severe vessel disease) did not eliminate the association between telomere length of AF ($p=0.0159$).

Conclusions: In this sample of older, cardiovascular patients, TL is independently associated with AF. Shortened TL and associated functional consequences may mechanistically underlie age-related cardiac conduction anomalies leading to AF. Confirmation will require further study.