Lone Atrial Fibrillation

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A. Definition

- Lone atrial fibrillation is, by definition, atrial fibrillation without "overt" structural heart disease, as defined by the physical examination, electrocardiography, chest radiography, and in more recent series, the echocardiogram.
- Patients with LAF in the Framingham population demonstrated an almost 5-fold risk of stroke compared with age-matched populations, which is less than that seen in chronic atrial fibrillation.
- Further studies, including Trieste et al, revealed a lower thromboembolism rate in younger patients, thought to be related to natural age related heart physiology changes, slightly enlarged left atrium

B. Rationale

- Although, patients with LAF may not have overt heart disease, but slight changes that may predispose to thromboembolic events.
- Rostango et al. 1998 evaluated 56 patients with PAF in whom LAF suspected on clinical grounds, Mean Age 54, average LA size 3.5 cm, no correlation with thromboembolic disease made.
- The studies evaluating risk of thromboembolism did not comment on average atrial size.
- Note: Henry et al. 1980 Circulation evaluated normal echocardiographic findings in over 250 normal adults. LA size range 1.9 – 4.0 cm Avg 2.9 cm

C. Hypothesis

- Patients with atrial fribrillation and enlarged left atria have been observed to have increased risk of stroke. Kannel NEJM 1982
- Our hypothesis is that patients with Lone Atrial Fibrillation may have slight increases in atrial size, not classified as overt heart disease.
- Title: Echocardiographic characteristics in lone atrial fibrillation: a comparison of atrial size and gender.
- Implications: This difference in atrial size may confer the slight increased risk of thromboembolic events seen in these patients or may be related to its pathophysiology.
- If difference in the average atrial size is seen, future epidemiologic studies to evaluate the effect on stroke can be conducted.

D. Methods

- Study Outcome: average size of left atrium in patients with lone atrial fibrillation
- Left atrial size will be obtained from M-mode echocardiography.

E. Study Design

- Cross-sectional study/ Medical Chart Review
- Patients with lone atrial fibrillation were identified and the size of the left atrium were identified simultaneously.
  1. All patients with atrial fibrillation on CPMC electrocardiography in 1999 were identified.
  2. About 98% of those patients, had M-mode echocardiography performed at CPMC.
  3. All echo reports were read in WebCis, patients with normal echos were identified.
- Final definition for normal: normal except Trace TR/MR as NYPH has very sensitive echo machines and these may be insignificant.

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F. Preliminary Data

- So far from over 5000 EKGs done at CPMC with atrial fibrillation, a total of 133 patients were identified that meet our definition of LAF.
- Mean female age 72 yrs.
- Mean male age 69 yrs.
- Atrial size range 3.2 – 4.5 cm, the mean is not yet identifiable b/c several echos did not have atrial size in cm.
- A cardiology fellow was recruited to review the actual echos and measure the LA size. She was not told the study hypothesis or aim.

G. Study Design

- Control Subjects
- Identify patients who had normal echocardiography for reasons other than atrial fibrillation and quantify average atrial size.
- Patients will be identified from pool of normal echo's completed in 1999.

H. Statistical Analysis

- Initial Demographic Data analysis will be completed using SPSS
- Null: u=u0, there is no difference in between the mean atrial size of the patients with LAF and general population
- Alternative: u<u0, patients with LAF have left atrial sizes that are greater than the general population
- Will use one sample t-test for the mean of a normal distribution (two-sided alternative)
- t=(x-u0)/(s/sq root n), if $|t| > t_{n-1,1-\alpha/2}$ Ho is rejected, if $|t| \leq t_{n-1,1-\alpha/2}$ then Ho is accepted.
- Then a p value can be calculated at 5% level of significance
- p=2xPr(t n-1$\leq$t), if t<0 or 2x[1-Pr(t n-1$\leq$t), if t> 0
- Sample size estimation when testing for mean of a normal distribution (two-sided alternative)
- $n=\sigma^2(z_{1-\beta} + z_{1-\alpha/2})^2/(\mu_0-\mu_1)^2$, n=113
- In order, to compare the LA size of the patients with LAF and the control group
- A paired two-sample t test can be used, after conducting an F test to determine whether both samples have equal variances.
- Sample size can be determined then using the sample size needed for comparing the means of the two samples based on equal/unequal size.

I. Miscellaneous

- Issues
- Confidentiality of study data
- Addition of a control group
  Future studies