Atrial Fibrillation: Epidemiology, Natural History & Risk Factors

G.L. Hoff, DO, FACOI, FACC
Dept. of Behavioral Medicine, Medical Humanities & Bioethics
College of Osteopathic Medicine
Disclosure

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Atrial Fibrillation: Prevalence

• Most common sustained arrhythmia in USA
Atrial Fibrillation: Incidence

AF incidence increases with age & CV disease.
Atrial Fibrillation: Prevalence

- Depends on population studied
- Risk increases with age*: 
  - 0.1% < age 55
  - 2.3% > age 40
  - 5.9% > age 59
  - ~70% with afib are age 65-85
- Prevalence higher in men

*Feinberg et al: Arch Int Med 1995
Atrial Fibrillation: Prevalence*

- Overall ~1 percent;
  - 70 percent ≥65 years old
  - 45 percent ≥75 years old.
- Prevalence ranged from 0.1 percent among adults less than 55 years of age to 9 percent in those ≥80 years of age
- Higher in men than women (1.1 versus 0.8 percent) in every age group
- Subjects > 50, more frequent in whites than blacks (2.2 versus 1.5 percent).

Atrial Fibrillation: Prevalence*

Cross-sectional study of prevalence of atrial fibrillation in ~1.9 million men and women.

Atrial Fibrillation: Projected Prevalence

Projected Number of US Adults with Atrial Fibrillation, 1995 through 2050
(Upper and lower curves represent the upper and lower scenarios based on sensitivity analyses.)

Atrial Fibrillation
Natural History

• Usually begins paroxysmally—defined as burst arrhythmia lasting <1 day;
  – may last up to 7 days before sinus rhythm returns

• When >7 days the AF is termed persistent

• Eventually, atrial fibrillation becomes permanent—defined as AF>1 yr duration
Atrial Fibrillation: Risk Prediction Model

- Risk prediction model predicts absolute risk over 10 years*
- Factors studied:
  - age & gender,
  - systolic blood pressure
  - treatment for hypertension
  - heart failure
  - significant cardiac murmur
  - PR interval
  - BMI
- Validated in other populations, but utility still unclear

Atrial Fibrillation: Risk Prediction Model

Comparison of the risk of atrial fibrillation in 10 years by sex calculated from associated risk factors with the risk equation (figure from Lancet. 2009;373(9665):739)
Atrial Fibrillation: Substrates

- Hypertensive CV disease
- Coronary artery disease
  - acute MI
  - CAD with heart failure
  - (low incidence of AF in stable angina)
- Valvular heart disease
- Atrial enlargement
  - mitral valve disease
  - rheumatic heart disease
- Toxins (e.g. EtOH, anticancer tx)
- Metabolic diseases (e.g. hyperthyroidism)
Atrial Fibrillation:
Definitions

• **Paroxysmal AF**
  - episodes may last 1-7 days (usu < 24 hours)
  - may be recurrent, (two or more episodes)

• **Persistent AF**
  - not self-limited; lasts for longer than 7 days
  - called “paroxysmal” when recurrent after reversion.

• **Permanent AF**
  - lasts over a year
  - cardioversion either failed or not attempted

• **"Lone" AF**
  - no overt cardiovascular pathology
  - asymptomatic
  - comprises 10-15% of all AF