OBSERVATION MEDICINE, ATRIAL FIBRILLATION

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Disclosures

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• I will also be starting a GoFundMe account just because
Objectives

- To discuss atrial fibrillation (AF) and stroke risk
- To discuss the role of an Observation Unit in the treatment of atrial fibrillation
- To discuss the options of appropriate treatment for the atrial fibrillation patient based on duration of symptoms, > or < 48 hours
- To discuss appropriate risk stratification and anticoagulation of atrial fibrillation patients
Stroke Risks in Atrial Fibrillation

- Atrial Fibrillation (AF) is the most common arrhythmia
- Affects 3.1 million people in the USA
- 1% of people < 60 yo, but 10% of people over 80
- Yearly stroke risk in 50s, 1.5% per year
- Yearly stroke risk in 80s, 23.5% per year
- Mortality rate of patients with AF is twice those in Normal Sinus Rhythm even when adjusted for severity of underlying heart disease
Left Atrial Appendage Most Common Source of Thrombus

- Muscular sac off of left atrium
- Old name “Left Auricle”
- Our most lethal human attachment
Atrial Fibrillation Some Definitions

- First Detected, may be either paroxysmal or persistent
- Paroxysmal (Self-terminating), < seven days, most less than 24 hours
- Persistent (not self-terminating), lasting longer than 7 days, requires treatment to convert to sinus rhythm
- Permanent: longstanding (generally > 1 year) in which sinus rhythm can not be maintained in spite of treatment or treatment has been abandoned, patient is always in AF
Atrial Fibrillation Definitions Cont.

• Recurrent: 2 or more episodes
• Lone Atrial Fibrillation: <60 yo without cardiac disease or hypertension
• Nonvalvular Atrial Fibrillation: AF without evidence of rheumatic heart disease, mitral valve disease, prosthetic heart valve, or mitral valve repair
• Recent Onset Atrial Fibrillation (ROAF): < 48 hours, absolutely known onset, may be lone or recurrent
• New Onset= First Detected

• Different studies use different definitions
Potential Contributors to Atrial Fibrillation

- Heart Disease, new event or old, ischemic or valvular
- Pulmonary Embolus
- Thyrotoxicosis
- Infectious, Urinary tract extremely common in the elderly
- Anemia
- Dehydration
- Medications and supplements
- Stress
- Caffeine
- Etoh
Evaluation starts in the Emergency Department

• Assess first stable or unstable
• Treat unstable patients and look for comorbidities that may require hospitalization
• Assuming the patient is stable and no comorbidities are found then evaluate and develop strategy
• Determine rate control or rhythm control strategy
• This is determined by asking some questions?
Duration of Symptoms

• Can you feel your symptoms?
• When did it start?
• Are you sure?
• Did you have any symptoms before that?
• When in doubt err on the side of caution
Difficulties with Atrial Fibrillation (AF)

• Patients with symptomatic atrial fibrillation may have other asymptomatic episodes, up to 90 percent in one study.
• In one study with pacemaker placement and recordings it was found that 50 percent had recurrent episodes and 38 percent had no symptoms of these episodes on maximized antiarrhythmic therapy.
• So some people who can tell, still can’t tell all the time.
• And others can’t tell at all when they are having AF.
• So this is important for anticoagulation and stroke risk.
Stable Atrial Fibrillation, > than 48 Hours or Unknown duration

- If the 48 hour window has been missed you want to **Rate control only and anticoagulate**
- **YOU DO NOT** want to attempt direct cardioversion (DCC) or entice pharmacologic cardioversion (PCC) in these patients
- These patients should not be given a rhythm control agent or cardioverted at this time!

- **RATE CONTROL ONLY and anticoagulate!**
Stable AF patients >48 hours duration

- If no comorbidities and patient is stable, patient does not need to be admitted to the hospital
- Can be started on rate control medication and anticoagulation in the ED and Observation Unit
- Example: the patient that goes for their yearly checkup, totally asymptomatic and is found to be in Atrial Fibrillation
- Most stable patients can be treated through the Observation Unit
- Only unstable patients, patients with other active comorbidities or complex patients need to be admitted to the hospital
Rate Control When Stable AF with RVR

- Boluses followed by drips and titration if patient will be hospitalized for secondary reasons
- Check medications the patient is already on and use same class, more of…
- If patients will be able to go to ED Observation Unit (EDOU) or Home we use oral/IV bolus combinations instead of infusions
- Consider EDOU in stable patients with no other underlying medical conditions needing hospitalization, that are already or can easily be anti-coagulated
Stable Atrial Fibrillation with Rapid Ventricular Rate (AF with RVR), Acute Rate Control

- No other Cardiovascular disease: Beta blocker or Calcium channel blocker
- In COPD usually use calcium channel blocker
- In heart failure with poor ejection fraction and AF, a beta blocker or IV digoxin or combination, treat overload
- Heart Failure with preserved ejection fraction (HFpEF): Beta blocker or calcium channel blocker
- Hyperthyroidism: beta blocker is recommended
Anticoagulation in the ED

- In AF patients with unknown duration or duration ≥ 48 hours or asymptomatic (can’t tell), and not already anticoagulated, the patient should be anticoagulated.
- These patients will stay on anticoagulation for at least three weeks or until they receive a transesophageal echocardiogram (TEE), before attempted cardioversion (delayed cardioversion).
- Anticoagulated for 4 weeks after cardioversion or a negative TEE, longer if + TEE and cardioversion deferred.
- Long term anticoagulation is assessed by risks stratification tool (CHA$_2$DS$_2$-VASc).
CHA$_2$DS$_2$-VASc

- Score 9 stroke risk/ year 15.2%
- Score 8 stroke risk/ year 6.7%
- Score 7 stroke risk/ year 9.6%
- Score 6 stroke risk/ year 9.8%
- Score 5 stroke risk/ year 6.7%
- Score 4 stroke risk/ year 4.0%
- Score 3 stroke risk/ year 3.2%
- Score 2 stroke risk/ year 2.2%
- Score 1 stroke risk/ year 1.3%
- Score 0 stroke risk/ year 0.0%

- Note score 8, not a mistake, had less patients in category
- Yip et al, European Guidelines
Anticoagulation in AF < 48 hours (ROAF)

- ROAF patients who choose delayed cardioversion will be on anticoagulation for 3 weeks or until a Trans esophageal echocardiogram is done, even if long term risk is low
- Patient will then be on anticoagulation for 4 weeks after TEE even if negative
- Long term risk for anticoagulation should also be assessed
- All patients should be anticoagulated long term based on risk stratification regardless of duration of symptoms
Recent Onset Atrial Fibrillation < 48 hours well known duration, (ROAF)

- Evidence (particularly in the ED literature) that it is safe to perform direct cardioversion (DCC) on AF of <48 hours if time is absolutely known.
- This is particularly true in younger healthy patients with lone AF or recurrent AF that the patient is symptomatic with and knows exact onset.
- Keep in mind the difficulties in establishing duration, make sure to ask and re-ask the question?

Coll-Vincent et al, 2012
Recent Onset Atrial Fibrillation (ROAF) < 48 hours

- 14 paper review, meta-analysis
- High rate of conversion, low rate of complications, marked decreased length of stay
- 0.1% thromboembolic event (< the stated stroke risk on warfarin (.6%, 30 days)

Coll-Vincent et al, 2012
Recent Reports from Finland

• 7 year review of patients with <48 hours duration, 30 day risks, retrospective

• .7% Thromboembolic Rate (TE) overall, 1.5 % patients

• Higher CHA$_2$DS$_2$VASc had higher stroke rate, Odds Ratios (OR) highly predictive

Airaksinen KE et al., 2013
Thromboembolic Events (TEs) in 30-days

- Duration of time increased ORs for stroke risks < 12 hours, 12-24 hours, 24-48 hours
- Risk at 30 days < 12 hours (.3%), 12-24 hours (1.1%), 24-48 hours (1.1%)
- CHA$_2$DS$_2$-VASc 0-1, 30 days, 10 TEs, .2 % cardioversions, .4 % patients
- Don’t know which patients were which?
- Time probably a continuum
- Remember stroke risk on warfarin, .3% per 30 days

Airaksinen KE et al., 2013
48 hour Atrial Fibrillation Patients

- If CHA₃DS₂-VASc score > 0, anticoagulate even if cardioverting
- If < 48 hours and CHA₂DS₂-VASc score=0, have a discussion with patient, Consider short term anticoagulation, 4 weeks
- Newer anticoagulants means patients don’t need to be in the hospital for anticoagulation
- Probably will never be a definitive prospective study on these patients (score 0) as numbers needed would be astronomical due to low risk/event rate overall
So where are we left with ROAF, < 48 hour patients?

• If difficulty with length of time, unsure, err on longest estimate

• When in doubt anticoagulate and use TEE strategy

• If high CHA$_2$DS$_2$-VASc score even if < 48 hours, anticoagulate for sure, and consider TEE before cardioversion
Options for ROAF

50% of Recent Onset Atrial Fibrillation patients will **spontaneously** convert in <24 hours!

- Calculate the time you have to work with up to the 48 hour cutoff
ROAF < 48 hours

- We calculate the time we have to work with
- If short we discuss the patients options with them
- Either immediate DCC or anticoagulation and delayed DCC by cardiology follow-up
- If longer time to work before 48 hours elapse, options are immediate DCC, Observation with pharmacologic attempt followed by DCC if failed, or Delayed DCC by cardiology with anticoagulation
- Some even send patient home if time to 48 hour mark allows and patient is stable, then reevaluate the next day for possible cardioversion

- Always recommend a discussion with cardiology
Pharmacologic Cardioversion

- Propafenone
- Flecainide
- Procainamide
- You have options
Ottawa Aggressive Protocol

- Uses 48 hour cutoff
- Uses procainamide for PCC, 58.3% conversion rate
- Uses DCC if no conversion with procainamide
- Anticoagulate based on CHAD\(s_2\) \(\geq 1\)
- Discharge after 1 hour post conversion
- Median length of stay was 5 hours
- Close follow-up and referral
Emergency Department Observation Unit

- Perfect for aggressive treatment of AF

- Either rhythm or rate control

- For rhythm control, we use propafenone for attempted cardioversion if we have time to work with in patients less than 48 hour duration or on anticoagulation already

- Keep the patient NPO for cardioversion, prefer 6 hours and 1 hour post hour post conversion

- Use enoxaparin or non vitamin K oral anticoagulants initially
EDOU Treatment/Actions

- Rhythm control for patients with AF of absolute duration <48 hours
- Rate control for patients with AF of unknown duration or duration ≥48 hours
- Risk stratification and appropriate anticoagulation
- Cardioversion in appropriate patients before 48 hour time limit
Recent Onset AF in the EDOU

- We consult with cardiology for follow-up, Atrial Fibrillation Clinic nurse

- We will start anticoagulation for follow-up based on CHA$_2$DS$_2$-VASc score, offer others 4 weeks anticoagulation

- We record time of onset and time of 48 hours, get notified by nursing if patient hits the 40 hour mark

- Cardiovert with sedation, etomidate or propofol

- Watch for 2 hours after conversion then discharge home, with appropriate anticoagulation
EDOU Atrial Fibrillation Evaluation

- Serial troponins
- Ischemia evaluation if necessary
- Hypertension Control
- 2 D echo or TEE
- Monitoring for comorbidities
- Anticoagulation evaluation and arrangement
- Education regarding atrial fibrillation
- Education regarding anticoagulation
- Electrophysiology/ Cardiology Consult
ED Observation Atrial Fibrillation
Inclusion Criteria

- Stable vital signs
- Normal oxygenation
- Heart Rate consistently below 110-120 times after control
- No comorbidities requiring inpatient treatment
- No evidence of significant Congestive heart failure
- Normal initial troponins or low grade without signs or concerns for ischemia
- No evidence of Ischemia on ECG
- No evidence of active bleeding or bleeding disorder
ED Observation Atrial Fibrillation
Exclusion Criteria

- Unstable vital signs
- Acute comorbidities requiring hospitalization
- Positive initial troponins in face of ischemia risks
- Ischemic ECG Changes
- Pulse oximeter less than 94 %
- Signs of Acute Congestive Heart Failure
- Active bleeding or bleeding disorder
Summary

• Treatment of Atrial Fibrillation is very feasible in an Observation Unit
• Particularly now with the new non vitamin K oral anticoagulants
• Patients can be rate controlled and anticoagulated
• Patients with short duration atrial fibrillation or already anticoagulated can be rhythm controlled
• Only complex patients or patients with comorbidities requiring hospitalization should be hospitalized
Thank you for having me!
Any Questions?