

Location: Office

Vitals: B.P: 130/76 mm Hg; H.R: 130/min, irregularly irregular pulse; Temp: 38.3C; R.R: 18/min.

HPI: A 60 yr white female who has known H/O CAD, S/P CABG presents to your office with 2-day H/O dizziness, light-headedness, and palpitations. She describes the palpitations as irregular, and almost continuous. She denies any chest pain, angina, SOB, orthopnea, PND, or syncope. She also felt little warm since one day. She denies any cough, URI symptoms, dysuria, abdominal pain, and leg swelling. Her ROS is positive for frequency of urination.

PMH: She had undergone 3 vessel CABG 3 years ago after an acute anterior wall MI. Her other medical problems include HTN, Type II DM, hypercholesterolemia, osteoarthritis, COPD, and gout. **All:** She has no allergies. **SH:** She quit smoking after her CABG. She occasionally drinks alcohol. She lives with her husband at home. **FH:** Father died at the age of 70 with MI. Mother died at the age of 68 from stroke. She has one brother and one sister both have HTN, and DM. **Meds:** She takes ASA 81mg po qd, simvastatin 20 po qhs, lisinopril 5 mg po qd, SL NTG prn, glyburide 5 mg po QD, metformin 850 mg po bid, albuterol puffs prn, and acetaminophen with codeine for osteoarthritis. How do you approach this patient?

Order physical exam:

General
HEENT/Neck
Lungs
Heart
Abdomen
Extremities
Rectal exam with FOBT

Results:

HEENT/Neck is WNL. There are few rales and decreased breath sounds noted at left lower base. Heart exam is WNL. Abdomen is WNL. No edema or JVD noted. Hem negative for stools.

Order review:

Pulse oximetry, stat
IV access
12 lead EKG, stat

Results:

94% on room air
EKG showed atrial fibrillation with rapid ventricular response at a ventricular rate of 120-140/min. There are Q waves in anterior leads, consistent with old MI. LVH pattern is noted.

Order review:

Cardizem IV, bolus
CBC with diff, stat
BMP, stat
Chest X-ray, PA and lateral, stat
CK MB, and troponin T/I , stat and Q 8hours x 2
U/A, stat
LFTs, stat
TSH, stat
Free T4, routine
PT/INR/aPTT, stat

Order review:

Admit to floor/ward

Telemetry
Vitals Q 4 hours
Pulse oximetry Q4 hours
Order 'old records'
Diet: Consistent carbohydrate diet
Activity: Bed rest with bathroom privileges

Labs:

HbA1C, stat
Accuchecks QID(4 times a day)
2D-echo, routine

Meds:

Continue all home medications: ASA 81mg po qd, Simvastatin 20 po qhs, lisinopril 5 mg po qd, SL NTG prn, glyburide 5 mg po QD, metformin 850 mg po bid, albuterol prn, and acetaminophen with codeine for osteoarthritis
Start Cardizem (diltiazem), IV drip,
Start Heparin, IV, continuous
PTT every 6 hours
Daily CBC with diff
Call me when lab results available

Results:

CBC with diff showed a WBC count of 12,000 with 3% bands. Hb is 13.5. Platelet count is 230,000. BMP showed a Na: 140, K: 4.0, CL: 102, Co2: 22, BUN: 20, Cr: 1.0. Chest X-ray showed small left pleural effusions unchanged from previous 1 yr X-ray. TSH is 1.5. Free T4 is WNL. LFTs are WNL. HbA1C is 7.2. U/A showed positive esterase, 50 WBC, and many bacteria. Urine culture is pending. PT/INR is 14.0/0.98. PTT is 30. First set of cardiac enzymes - negative. 2D -echo showed normal LV function with an EF of 50%, mildly dilated left atrium, normal valves, and mild hypokinesis of the anterior wall. Findings unchanged from previous echo. No LV/LA thrombus notified.

Order review:

Urine culture and sensitivity
Bactrim PO QD (TMP-SMZ)
Examine the patient in 2 hours

After 2 hours:

Interim history
Monitor telemetry strip: HR is now 90-100/min; patient is still in atrial fibrillation
Repeat EKG: HR is now 90-100/min; patient is still in atrial fibrillation.
Call me when needed.
Examine the patient in next 6 hours
Again order interim history and monitor telemetry strip
Once the HR is less than 80
D/C Cardizem drip
Start Cardizem PO, continuous
Next day
Start Coumadin po continuous
Daily PT/INR

Examine next day:

Check CBC, PT/INR, telemetry strip
Once the PT/INR is above 2.0, D/C IV heparin
Discharge the patient
Patient education
Out patient followup in 3 days with repeat CBC, PT/INR

Discussion:

The principle issues in managing a patient with atrial fibrillation with rapid ventricular response include:

1. Rhythm control or rate control
2. Anticoagulation to prevent systemic embolization

3. Correcting the underlying abnormality

Rhythm control: It is indicated in: 1. acute atrial fibrillation (less than 48 hours duration), 2. Hemodynamically unstable patient, 3. patients with acute coronary syndromes, 4. Patients with severe heart failure. It can be done by either DC cardioversion or pharmacologic cardioversion. DC cardioversion is particularly indicated in unstable patients. In stable patients, and patients with a reversible underlying problem can be dealt with either electrical or chemical cardioversion. The commonly used drugs for rhythm control include dofetilide, ibutilide, and to a lesser degree amiodarone. Amiodarone is particularly useful in patients with left ventricular dysfunction. Without chronic antiarrhythmic therapy, only 20-30% of patients who are successfully cardioverted remains in NSR for more than one year. The 2 commonly used medications for the maintenance therapy are amiodarone (patient with left ventricular dysfunction) or sotalol (in patients with CAD).

Rate control: The 3 most commonly used AV nodal blockers for the rate control are beta-blockers, calcium channel blockers, and digoxin. Digoxin is particularly indicated in patients with heart failure or hypotension. In most other situations digoxin is less effective than a beta-blocker or calcium channel blocker. The choice between a CCB or beta-blocker depends upon physician preference, and the patient presentation. Beta-blocker is preferred in patients with H/O angina, acute MI. The use of calcium channel blockers is preferred in patients with chronic lung disease. In most situations Cardizem (diltiazem) is the preferred drug as it is easy to administer in the form of IV drip and the dose can be titrated for a goal heart rate. Patients who fail to respond with pharmacologic treatments require EP study and radiofrequency AV nodal-His bundle ablation.

Choosing between Rate and rhythm control:

Until recently, rhythm control has been the preferred method over rate control for patients presenting with the first few episodes of atrial fibrillation. The thought was controlling the rhythm causes low frequency of embolic events. However, the 2 major clinical trials (AFFIRM, and RACE) have demonstrated no significant difference between the 2 groups in terms of embolic events, functional status, or quality of life. Thus, both rate and rhythm control are acceptable approaches and both require anticoagulation. There is a growing support for rate control.

Anticoagulation:

There are 3 situations where you should consider anticoagulation: 1. Chronic AF, 2. Recurrent AF, 3. Prior and after cardioversion.

AF of more than 48 hours or unknown duration requires at least 3 to 4 weeks of warfarin prior to and after cardioversion. The target INR is 2.5(2.0-3.0). Patients with recurrent or chronic AF should be treated with long-term anticoagulation even if they are in sinus rhythm. Patients who have underlying rheumatic valvular disease, severe LV dysfunction, or recent thromboembolism should receive anticoagulation even if the duration of AF is less than 48 hours.

Patients with AF of less than 48 hours duration without concurrent valvular disease, or severe LV dysfunction, or H/O thromboembolism are treated with cardioversion under IV heparin coverage but without long term coumadin.

The other alternative approach for cardioversion to avoid prior prolonged anticoagulation is TEE guided cardioversion.

When should I admit a patient with AF?

Low risk patients (patients without valvular disease, or severe LV dysfunction) with AF of less than 48-hour duration and uncomplicated clinical status can be cardioverted and discharged from the ER. Hospitalization is necessary in high risk and hemodynamically unstable patients.

Searching for the underlying cause:

The common causes of new onset AF include heart failure, acute coronary syndromes, PE,

HTN, hyperthyroidism, and infections. Serum TSH and free T4 should be checked in all patients even if they do not have symptoms of hyperthyroidism as there is a 3 fold increase of AF in patients with subclinical hyperthyroidism (Low TSH and normal free T4). If the AF is caused by an underlying problem, cardioversion should be postponed until the condition has been successfully treated. However, anticoagulation should be started.

Primary Diagnosis

Atrial Fibrillation

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