Current Management Strategies for Atrial Fibrillation

NEW TECHNIQUES IN THE MANAGEMENT OF ATRIAL FIBRILLATION IN 2008

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HOST:
Lee Freedman, MD

GUEST:
Jashua Cooper, MD
Atrial fibrillation, a very common arrhythmia, but whose management can be quite complex. What is new in the management of atrial fibrillation in 2008? Welcome to Medical Breakthroughs from the University of Pennsylvania Health Systems on ReachMD XM 157, the channel for medical professionals.

I am Dr. Lee Freedman and joining me today is Dr. Jashua Cooper, Assistant Professor of Medicine at the University of Pennsylvania Health Systems.

Dr. FREEDMAN:
Dr. Cooper, thank you so much for being with us.

Dr. COOPER:
Thank you for having me, it's a pleasure.

Dr. FREEDMAN:
Atrial fibrillation we see all the time, but really why do we see this? What is the underlying cause of atrial fibrillation?

Dr. COOPER:
Atrial fibrillation, as you suggest, is indeed a complex and common rhythm and one of the key features is how varied it is from one individual to the next with regard to both causes and patterns of atrial fibrillation as well as management strategies, and so there may be a subset of patients who have a specific reversible cause that has created the atrial fibrillation abnormality. There are many patients
who we do not understand why they have it, although we are learning and more so in the most recent years on how to treat it because we understand certain patterns and differences from one patient to another, which really helps guide treatment.

Dr. FREEDMAN:

And certainly when I think about reversible causes, we all check thyroid function studies and perhaps look for some pathomimetic drugs, are there other ones that we should be aware of?

Dr. COOPER:

Certainly, as you say it is important in any patient with a new diagnosis of atrial fibrillation to make sure that the thyroid is working properly and that is a routine part of A-Fib initial assessment. There are some patients who have respiratory conditions, for example, pneumonia can lead to a new diagnosis of atrial fibrillation and when that clears the patient may return to normal rhythm and not have A-Fib seen for years thereafter. There are some medications, which can be associated with it. There are certain stimulants, certainly alcohol and caffeine have been common agents that have been linked to atrial fibrillation in some patients and avoidance of these beverages or exposures can actually eliminate atrial fibrillation. A few other thoughts that come to mind include patients with obstructive sleep apnea. Some patients have atrial fibrillation occur only nocturnally at night when they are sleeping and this may be either because their heart rates tends to run very slow, which gives opportunity for other spots to start filing and initiate A-Fib or during an episode of apnea and hypoxemia, there can be additional stresses on the atria that seemed to provoke rapid firing and triggering of an episode of A-Fib as well and in that scenario treatment of the sleep apnea can frequently leads to elimination of the atrial fibrillation through use of a CPAP machine, for example.

Dr. FREEDMAN:

That's interesting, so that type of patient will only go into atrial fibrillation at night when the sleep apnea
Dr. COOPER:

Yeah, that seems to be case and sometimes we will recommend in somebody who is known to have snoring or apneic spells during sleep according to their spouse who may witnesses these, we will suggest the sleep study before treating or looking for other causes of atrial fibrillation because it may will be that is the culprit and again treating the sleep apnea may indeed treat both problems.

Dr. FREEDMAN:

In any patient obviously it is very important to look for these reversible causes because correction of those underlying problems may lead to resolution of the arrhythmia. In terms of treatment, I usually think of controlling the ventricular rate is the first step. Is that the appropriate thing to do initially?

Dr. COOPER:

Yeah, from a medical standpoint, the two main concerns of atrial fibrillation are (1) the risk of stroke and (2) the risks associated with excessive ventricular rates. There is an entity called tachycardia mediated cardiomyopathy, which basically means that if the ventricles are running at too fast rate, then over time depending on the burden of atrial fibrillation meaning how long they are having these rapid ventricular rates, you can see decline in left ventricular function. The critical rate beyond which you start to see this is not entirely clear, but probably is around 100 to 110 beats per minute, although remember that in atrial fibrillation because the cardiac intervals are variable one to the next, the average heart rate may be 90, but there may be very frequent intervals that are up in the 130 to 150 range for example, and so you may indeed have a tachycardia, cardiomyopathy even if the average rate is not seemingly excessive according to, for example, a Holter monitor.
Dr. FREEDMAN:

That's fascinating, and so rate control is important not only in terms of any immediate hypotension and decreased cardiac output, but certainly over time because of the tachycardia induced cardiomyopathy possibility. How does one make that diagnosis, is it with more prolonged monitoring?

Dr. COOPER:

Well, if somebody has a reduced left ventricular ejection fraction, one must always think of all of the other causes of reduced function including coronary artery disease and other causes of cardiomyopathy including viral and familial cardiomyopathies, but if someone has coincident atrial fibrillation with rapid rates then one certainly needs to treat the rapid rates first. The nice feature about tachycardia and cardiomyopathy is that once the rates are well controlled, we frequently will see an improvement in ventricular function over the next coming weeks to months if not close to normal, perhaps even to normal and so as you suggested with your initial question, rate control is extremely important in the setting of rapid ventricular rates from a cardiomyopathy standpoint. There seems to be variation from one individual to another how susceptible one may be to this type of cardiomyopathy. Some patients may have rapid ventricular rates and not have a decline in ventricular function where another patient might and the susceptibility component is not well understood.

Dr. FREEDMAN:

And in terms of controlling that ventricular rate when I was resident, digoxin was reached for. We do not see that very much, what is new in front line in terms of controlling rates?

Dr. COOPER:

The way that digoxin controls the rate is it is a vagotonic drug. It actually enhances vagal tone to the AV node and so in isolation it is not a tremendously effective drug especially in younger patients.
Catecholamines can pretty easily overcome the affective digoxin on the AV node so merely getting up and walking around or engaging in exercise can result in very rapid conduction of atrial fibrillation even if at rest the heart rate appears to be controlled. This is why it is important I think to assess heart rates not only during an office visit on an electrocardiogram, but to get at least a 24-hour Holter monitor to look for the range of heart rates that the patient experiences through a normal day. So other agents aside from digoxin would include beta blockers and calcium channel blockers realizing that in the latter category, diltiazem and verapamil are the ones that affect the AV node. The dihydropyridine and calcium-channel blockers do not have an effect of slowing the ventricular rates. Frequently, a combination of drugs may be useful especially when one is trying to limit side effects. Beta-blockers as you know can cause fatigue and other side effects including depression, etc. So perhaps using a low dose of beta-blocker in combination with a long-acting diltiazem or verapamil and perhaps digoxin as well frequently can result in better rate control without perhaps accumulating side effects that may occur if one used a single agent at higher doses.

Dr. FREEDMAN:

If you just joined us you are listening to Medical Breakthroughs from the University of Pennsylvania Health Systems on ReachMD XM 157, the channel for medical professionals. I am your host Dr. Lee Freedman and I am speaking with Dr. Joshua Cooper, Assistant Professor of Medicine at the University of Pennsylvania Health Systems. We are discussing the 2008 approach to atrial fibrillation.

Dr. Cooper, anticoagulation, what are the latest guidelines in that regard?

Dr. COOPER:

It seems that there are certain risk factors that make patients more or less at risks for suffering a stroke in the setting of atrial fibrillation. There have been different guidelines and different sets of criteria that have been used. The most commonly used one and seems to hold up pretty well is called the CHADS2 risk score system, it's an acronym standing for congestive heart failure, hypertension, age over the age of 75, diabetes mellitus, and a history of a stroke or a TIA and that latter counts as a double-fold risk
factor because it is so important in that, that's the 2 on the end. The more of these risk factors a patient has, the higher their risk for a stroke, so if someone has either paroxysmal or persistent atrial fibrillation and has at least one or more of these risk factors then one must seriously consider the use of warfarin or Coumadin for anticoagulation as that is the one medication that has been shown to have the greatest impact on stroke risk reduction. Studies that have compared warfarin to aspirin or Plavix or a combination of those antiplatelet agents have all clearly shown that warfarin is superior especially in patients who have greater risk factors for stroke.

Dr. FREEDMAN:

So that makes it a little bit easier to use that acronym in that guide. When are we satisfied just with rate control and anticoagulation versus returning people to normal sinus rhythm?

Dr. COOPER:

It's a very good and difficult question that really needs to be answered on an individual basis. Again, the main medical risks of atrial fibrillation or those of stroke in a tachycardia or cardiomyopathy and then thereafter one gets into the question of symptom relief, palpitations that come from atrial fibrillation can result most frequently from rapid ventricular rates and so merely controlling the rate may well resolve symptoms of palpitations, although in some patients merely slowing ventricular rate but not restoring sinus rhythm can leave patients filled with less specific symptoms such as shortness of breath, dyspnea with exertion, fatigue during the day, and sometime even a sense of palpitation because of the irregularity in the RR intervals during atrial fibrillation even when it's well controlled. So patients who continue to have symptoms despite good rate control are excellent candidates for attempting to restore sinus rhythm which can take the form of either antiarrhythmic drugs or a catheter ablation type of procedure.

Dr. FREEDMAN:
So that decision really is driven by symptoms, not everybody needs to be referred to have restoration of rhythm.

**Dr. COOPER:**

That is likely the case. There are unanswered questions. For example, in younger patients who look forward to a long life ahead of them, if they have atrial fibrillation, no one really knows the consequences of staying in atrial fibrillation for decades and it may well be as we learned more about atrial fibrillation over time that there is benefit of restoring sinus rhythm even in the completely asymptomatic patient, but that question remains out. I would say that most electrophysiologists would indeed favor attempts to restore sinus rhythm even in patients who are asymptomatic if they are young, because we just don't understand yet the long term consequences of leaving patients in atrial fibrillation.

**Dr. FREEDMAN:**

Very interesting. I want to thank Dr. Joshua Cooper, Assistant Professor of Medicine at the University of Pennsylvania Health Systems for discussing with us some of the latest thinking about the approach to this complex, but very common arrhythmia, atrial fibrillation. He stressed to us that we need to first exclude reversible causes for atrial fibrillation and address those if they are present. He then went through the CHADS2 criteria for anticoagulation and stroke prevention and then talked to us about restoration of sinus rhythm. Very interesting. Thank you again, Dr. Cooper.

This has been Medical Breakthroughs from the University of Pennsylvania Health Systems on ReachMD XM 157, the channel for medical professionals.

Thank you very much for listening.