LETTER FROM THE EDITOR IN CHIEF

Dear Readers,

Within this issue we are excited to offer clinical content that touches upon an expansive amount of topics, ranging from the utilization of closed-loop irrigated ablation catheter technology for paroxysmal and persistent atrial fibrillation ablation procedures by R Doshi, et al; to a review of the device troubleshooting techniques by Varma, et al; and a discussion on the alliance between cryoablation technology and three dimensional rotational angiography by Fontenla, et al, to name just a few.

Within this month’s letter, I would like to specifically discuss the important topic of peri-procedural management of anticoagulation therapy. This is an area of concern for those of us who are “in the trenches,” seeing patients on a daily basis. If it is not our office that is scheduling a patient for an ablation or device implantation, then it is one of our surgical colleagues asking if Mrs. Smith’s warfarin can be stopped for a back procedure. Now, with the new anticoagulants available, this is an even more complex issue.

Within the Atrial Fibrillation section of this issue you will find a manuscript entitled, “The Use of New Anticoagulants in Electrophysiology During the Periprocedure Period,” by Suneet Mittal and colleagues. The authors have done an excellent job in reviewing the data and sharing experiences from their facilities. I would like to build upon this topic by offering my personal experiences on this subject, how we approach peri-procedural anticoagulation at our center.

With regards to warfarin, for years we have stopped the drug three full days prior to a procedure. In high-risk individuals, such as those with a prior stroke, prior left atrial appendage thrombus, high CHADS2 score, or those with a mechanical valve, we have bridged these patients primarily with low molecular weight (LMW) heparin. For those patients scheduled for an atrial fibrillation/flutter ablation, and are out of rhythm on the day of their procedure, a transesophageal echo is done while the patient is in the electrophysiology lab as part of the procedure. As soon as arterial and venous access is obtained, patients are anticoagulated with unfractionated heparin with a goal ACT of greater than 300 prior to transseptal access. Warfarin is resumed immediately following the procedure. Atrial fibrillation ablation patients are kept in the hospital overnight and are treated with intravenous heparin. Patients are discharged home on half dose low-molecular weight heparin until they are therapeutic on warfarin. Half dose of LMW heparin is selected to minimize the risk of bleeding post-procedure. Over the years we have found that half dose LMW heparin, while awaiting therapeutic warfarin levels, has proved to be very safe and strikes a nice balance in preventing both thromboembolic and hemorrhagic complications in the first few days following the procedure.

We have not witnessed an increased risk of peri-procedural bleeding or stroke in our experiences of performing literally thousands and thousands of atrial fibrillation/flutter ablation procedures with this protocol. Certainly there are many who advocate performing atrial fibrillation/flutter ablations with uninterrupted warfarin therapy\(^1\). While we have performed AF ablation procedures for patients with uninterrupted warfarin therapy, our preference is not to do this. The rationale stems from the fact that, in the well over 2,000 AF ablations that I have personally performed in my career, I have experienced only four patients with a symptomatic stroke following ablation. I suspect this low level of stroke may be due to aggressive anticoagulation with heparin prior to the transseptal puncture, and the fact that I do not use a sheath in the left atrium (the transseptal sheath is “parked” in the inferior vena cava after transseptal access). Regarding these four patients, each had a complete neurologic recovery within one month.

On the other hand, cardiac tamponade remains the number one cause of death with AF ablation\(^2\). Having almost lost a patient once from cardiac tamponade, in a situation where we had two pericardial access sites and were autotransfusing blood as fast as we could pull it off from the pericardial space, all while rushing the patient to cardiac surgery, I can’t help but wonder what the outcome would have been if this patient was fully anticoagulated on warfarin. Would the bleeding rate from a therapeutic INR have overwhelmed both of the pericardial catheters? Would the FFP have arrived in time for the emergent cardiac surgery? Fortunately, the patient did well and has
remained cured from AF with no long-term complications from this event. This is certainly an experience I never want to relive again. Thus, I have to ask myself, with a clinical stroke rate of less than one in five hundred (all with a total neurologic recovery), what clinical benefit am I likely to gain by performing an AF ablation in a patient with a therapeutic INR?

I must admit, the data coming out regarding asymptomatic stroke following AF Ablation is certainly interesting, though I’m not quite sure what to make of it yet. We have performed a number of brain MRIs for our AF patients immediately following ablation for various reasons over the years, and have not seen any asymptomatic strokes. When we have looked at the long-term neurologic function in our AF ablation patients, their cognitive function was much better than those AF patients treated medically. While the mechanism for this remains unclear, it is certainly possible that this may be due to the fact that a large percentage of our patients ultimately have their anticoagulation discontinued after a successful ablation procedure. There is growing interest that long-term anticoagulation therapy leads to micro cerebral hemorrhages. These anticoagulation induced “micro bleeds” in the brain could lead to a decline in cognitive function over time. Thus, while anticoagulation may prevent strokes, could it contribute to the long-term cognitive decline seen with AF patients?

With regards to the new anticoagulants, dabigatran and rivaroxaban, we generally stop these drugs for two full days prior to a surgical or ablation procedure. In high-risk patients (prior stroke or a high CHADS score), we will stop these agents for just one day prior to their procedure. For AF ablations, these patients are managed with intravenous heparin both during and following the procedure as described above. At the time of hospital discharge the following day, we give the patient a half dose of their dabigatran/rivaroxaban (75 mg or 10 mg respectively) and instruct them to restart their dabigatran/rivaroxaban at their previous dose (150 mg or 20 mg respectively) at their next dosing interval. We have not witnessed any problems with thromboembolic or hemorrhagic complications with this approach. Indeed, we recently presented our data with dabigatran used in this fashion at the 2011 American Heart Association Annual Scientific Sessions. In 108 patients undergoing AF ablation, the only thing observed was an 8% risk of groin site hematoma with dabigatran. None of these patients required surgical intervention. By changing to half dose dabigatran for the first day following AF ablation this increased risk of a groin site hematoma was significantly reduced.

How do we know if dabigatran and rivaroxaban have washed out prior to a procedure? A simple test we use is the INR. If the INR is mildly elevated then there is some degree of dabigatran or rivaroxaban still “on board”. If the INR is normal then there is likely no significant amount of dabigatran or rivaroxaban still left. Thus, in our pre-cath unit, we check an INR for all of patients on anticoagulants prior to their procedure.

Certainly, there is concern for an acute rise in the stroke risk with abruptly stopping rivaroxaban based on the ROCKET Trial. While this is a concern, we have not experienced any problems thus far with our approach of discontinuing this drug for two days in low-risk patients and just one day in high-risk patients.

There was an interesting article recently published in the Journal of the American College of Cardiology by Lakireddy and colleagues that can provide additional thoughts for discussion. In this multi-center experience, Dr. Lakireddy reports their experience of uninterrupted warfarin versus dabigatran with AF ablation procedures. For dabigatran, only one dose was held, which was on the morning of their ablation procedure. While uninterrupted warfarin in AF ablation appeared safe, interestingly, with holding only one dose of dabigatran they observed a whopping 6.2% risk of cardiac tamponade in patients with essentially uninterrupted dabigatran anticoagulation. This is particularly frightening given the fact that there are no clear reversal agents for dabigatran. It is also worth considering that many of our AF ablation patients are elderly with some degree of renal impairment, and it could be a long time before the anticoagulation effects are potentially eliminated.

To make things even more interesting, in the United States, we will soon have another new anticoagulant agent available, apixaban. This will create new opportunities for us to gain experience in managing this agent in the peri-procedure time frame. Fortunately, apixaban is also a factor Xa inhibitor, similar to rivaroxaban, which means this agent may also be reversible with prothrombin complex concentrate. Stay tuned for future articles on this new agent.

To switch topics, I would also like to mention the special Fellows Edition that accompanies this issue of the Journal, made possible through support by Biotronik. The content in the Fellows Edition offers practical education from thought leaders in the field, which should serve as an adjunct to Fellows currently enrolled in a CCEP program. I would advise clinicians of all skill levels to review this special edition, as this type of content will help elevate our proficiency and ultimately raise the standards of patient care.
I hope that you will find this issue informative and enjoyable to read. My sincerest appreciation goes out to the expert group of authors, for taking the time to share their clinical experiences within this issue. We are always open to feedback on any of the articles, case studies or topics that are published within this issue or the accompanying Fellows Edition. Feel free to email me your thoughts.

Sincerely,

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