Left Atrial Appendage Thrombus with Resulting Stroke Post-RF Ablation for Atrial Fibrillation in a Patient on Dabigatran

Abstract:
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A 58 year old female with recurrent persistent symptomatic AF underwent a RF-ablation procedure. The patient had normal coronary arteries on angiography and mildly dilated left atrium on trans-thoracic echocardiography which was otherwise normal. CHADS2 score was 0, and normal renal function. The patient was on valsartan, lansoprazole, levothyroxine and sotalol, none of which had any known interactions with dabigatran. The patient was antiocoagulated with dabigatran (150 mg twice daily) for 5 weeks prior to the AF ablation and was omitted the day before and on the morning of the procedure (about 38 hours in total). The procedure was performed under general anaesthesia. Transesophageal echocardiogram (TEE) prior to left atrial access demonstrated no thrombus in the left atrium or the LAA (Figure 1). Heparin bolus (10,000 units) was administered before performing the trans-septal punctures. Heparin was infused via the 2 trans-septal sheaths throughout the case at a combined rate of 1000 units per hour. Additional heparin boluses were administered during the case aiming for target activated clotting time > 350 sec. The procedure involved wide area circumferential ablation and DC cardioversion to sinus rhythm. All pulmonary veins were successfully isolated. Dabigatran was restarted 3 hours after the procedure.

The patient was discharged home the next morning. 48 hours later, she presented with transient right sided hemiparesis and slurred speech. Physical examination at the time of admission revealed mild dysarthria only. Initial computed tomography (CT) scan of the brain was normal. The patient had a repeat TEE which demonstrated spontaneous echo contrast in the left atrium with thrombus present in the LAA (Figure 2). The patient was switched from dabigatran to warfarin with enoxaparin cover. A repeat CT brain performed four days later demonstrated a small acute left cerebellar infarct. The patient made a full recovery and had been well since.

Discussion
LAA thrombus can potentially cause significant morbidity. It appears that despite the use of dabigatran pre-and-post procedure, the patient developed a LAA thrombus that subsequently resulted in a stroke. The normal TEE prior to ablation demonstrates that the thrombus formed post-procedure. There have been a number studies looking at the use of dabigatran in patients undergoing RF ablation using different protocols. The current data in the literature is conflicting with regards to the use of dabigatran in RF ablation for atrial fibrillation. Our case supports the conclusions of Lakkireddy et al. Some studies with dabigatran are showing promise. Winkle et al showed favourable outcomes using dabigatran post-ablation by covering patients with enoxaparin before starting dabigatran 24 hours post procedure. Bassiony et al showed favourable outcomes in patients already on dabigatran by restarting dabigatran early (as soon as the procedure ended).

However, it is currently uncertain if there are potential interactions occurring that could alter the pharmacodynamics of dabigatran in patients undergoing invasive procedures. It has been shown that following hip surgery, the absorption of dabigatran can be both delayed and reduced. This could have significant clinical consequences as dabigatran’s oral bioavailability is only about 6.5%. There are also questions arising if dabigatran would alter the pharmacodynamics of other anticoagulants. Bassiony et al have noted that the mean activated clotting time were significantly lower in patients who were using dabigatran compared to the use of higher doses of intra-procedural heparin while undergoing RF-ablation. Although the authors of that study suggest that the higher requirements are secondary to the rapid elimination of dabigatran, the exact pharmacodynamics involved is uncertain. It would appear that a definitive protocol would need to be developed and undergo large multicentre clinical trials before dabigatran can be safely used for patients undergoing RF-ablation. Detailed knowledge of the pharmacodynamics of these new agents is essential to ensure safe prescribing. Remember, primum non nocere.

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References