P1901

Use of direct thrombin inhibitor on the day of atrial fibrillation ablation decreases incidence of silent cerebral ischemia detected by magnetic resonance imaging

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Background: There is increasing evidence to use direct oral anticoagulants (DOACs) in atrial fibrillation (AF) ablation. Uninterrupted use of DOACs is recommended for peri-procedural anticoagulation; the ways of choosing and/or using DOACs depend on physicians' decisions and preferences. Uninterrupted dabigatran (DAB), a direct thrombin inhibitor, reportedly decreased the risk of major bleeding (MB) in AF ablation, compared to uninterrupted warfarin (NEJM 2017; 376:1627). Among DOACs, only regular-dose of DAB (150 mg b.i.d.), showed superiority to warfarin for preventing ischemic thromboembolism (TE) in patients with non-valvular AF, implicating the powerful anti-thrombotic agent. DAB may decrease the potential risk of procedure-related TE.

Purpose: To evaluate whether use of DAB on the day of AF ablation decreases the prevalence of silent cerebral ischemia (SCI) detected by magnetic resonance imaging (MRI).

Methods: 414 AF patients on DOACs were enrolled and admitted on the day before AF ablation. Among 354 patients on factor Xa inhibitors (rivaroxaban, apixaban, and edoxaban), the original DOACs were switched to DAB (150 mg b.i.d.) on the day of the procedure in 172 patients (Group D); the treatment remained unchanged in 182 patients (Group non-D). In both groups, DOACs were continuously used throughout the procedure. After propensity-score matching, procedure-related parameters/events and the incidence of MRI-detected SCI were compared between Group D (n=134) and Group non-D (n=134). These parameters in patients originally taking DAB, used without interruption during the procedure (uninterrupted DAB, n=55), were also compared to Group D (n=55) after propensity-score matching.

Results: Baseline activated clotting time (ACT) before initial heparin injection was increased in Group D vs. Group-non-D (179±25* vs. 146±23 sec, *$p<0.05$ vs. Group non-D). The time to achieve optimal ACT (>300 sec) was shorter in Group D (34±29* vs. 43±32 min). The amounts of heparin needed to achieve optimal ACT and the total amount of heparin used during the procedure were unchanged between Group D and Group non-D. The incidence of SCI decreased in Group D (13.1%* vs. 21.9%), suggesting the potential anti-thrombotic efficacy of DAB. No MB or symptomatic TE events were observed in either group. Baseline ACT, the time to achieve ACT >300 sec, and the incidence of SCI in Group D were comparable to those in uninterrupted DAB (183±38 vs. 181±32 sec, 39±31 vs. 42±28 min, and 14.5% vs. 16.4%, respectively). No MB or symptomatic TE events were observed either in Group D or uninterrupted DAB.

Conclusions: Temporarily switching to DAB from the other DOACs and using it on the day of procedure enable us to achieve optimal ACT quickly and decrease the incidence of SCI, showing similar potential anti-thrombotic efficacy to uninterrupted DAB. Use of DAB on the day of AF ablation also benefits from the availability of its antidote in the case of MB during the procedure.