Does platelet reactivity depend on chronic oral anticoagulation choice in patients undergoing pulmonary vein isolation?

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Introduction: Direct oral anticoagulants (DOACs) are recommended in preference to vitamin K antagonists (VKA) in patients with atrial fibrillation (Afib)[1]. There is no direct comparison between DOACs and substantial share of patients are still treated with VKAs due to certain comorbidities or financial reasons. Pulmonary vein isolation (PVI) is an established procedure to treat paroxysmal and persis-

TABLE 1. Study patient characteristics.

Patients' characteristics	VKA (n=43)	Dabigatran (n=38)	Rivaroxaban (n=29)	Apixaban (n=26)	p
Age, years, mean (min-max)	58.2 (36-73)	61.7 (45-76)	59.3 (42-77)	60.1 (45-76)	0.659
Men, n (%)	31 (72.1)	27 (71.1)	22 (75.9)	15 (57.7)	0.487
BMI, kg/m², mean (min-max)	29.2 (22.0-37.6)	28.96 (21.4-38.1)	27.68 (22.1-34.7)	28.67 (23.1-38.3)	0.560
Paroxysmal Afib, n (%)	32 (74.4)	31 (81.6)	20 (68.9)	23 (88.5)	0.307
Arterial hypertension, n (%)	33 (76.7)	30 (78.9)	20 (68.9)	24 (92.3)	0.206
Hyperlipidemia, n (%)	22 (51.2)	23 (60.5)	14 (48.3)	12 (46.2)	0.654
Diabetes mellitus, n (%)	1 (2.3)	3 (7.9)	4 (13.8)	3 (11.5)	0.310
CrCl<60 mL/min, n (%)	2 (4.6)	6 (15.8)	4 (13.8)	3 (11.5)	0.343
CHA_2DS_2-VASc, mean (min-max)	1.72 (0-5)	1.94 (0-6)	2.07 (0-4)	2.54 (0-5)	0.095
HAS-BLED, mean (min-max)	0.77 (0-4)	1.12 (0-3)	1.00 (0-3)	1.15 (0-4)	0.238
Platelets, x10⁹/L, mean (min-max)	227.8 (134-379)	214.8 (126-318)	214.8 (126-318)	217.6 (119-308)	0.896
MPV, fL, mean (min-max)	9.9 (7.8-12.2)	10.7 (8.2-12.8)	10.7 (8.6-13.2)	10.8 (8.4-13.1)	0.020
PR before PVI					
ASPItest, mean (U)	35.4	29.1	14.2	20.1	0.022
ADPtest, mean (U)	28.9	23.6	16.9	13.4	0.049
TRAPtest, mean (U)	37.5	37.4	24.3	22.1	0.251
Periinterventional UFH administration, mean (IU) (min-max)	11952 (7000-24000)	13844 (7000-30000)	11944 (5000-26000)	13650 (9000-23000)	0.203

Afib = atrial fibrillation; ASPItest = assay for determination of platelet function triggered by arachidonic acid; ADPtest = assay for determination of platelet function triggered by adenosine diphosphate; BMI = body mass index; MPV = mean platelet volume; PR = platelet reactivity; PVI = pulmonary vein isolation; TRAPtest = assay for determination of platelet function triggered by thrombin receptor activating peptide-6; UFH = unfractionated heparin

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tent Afib but it increases thromboembolic risk[2]. The aim of this study was to compare periinterventional platelet reactivity (PR) in Afib patients undergoing PVI on different chronic oral anticoagulation.

Patients and Methods: PR was analyzed with Multiplate function analyzer in 136 patients undergoing PVI procedures in our institution. Blood samples were drawn before the procedure and on the following morning. ASPItest, ADPtest and TRAPtest were used as assays for the quantitative in vitro determination of PR triggered by arachidonic acid, adenosine diphosphate and thrombin receptor activating peptide-6, respectively. Fourty three patients (31.6%) were taking VKA, while 38 (27.9%), 29 (21.3%) and 26 (19.1%) patients were treated with dabigatran, rivaroxaban and apixaban, respectively. Edoxaban was not available during the investigation.

Results: There was no significant difference in demographics between the groups. Patients on VKA had lower mean platelet volume (MPV) compared to patients on DOACs (9.9 vs 10.7-10.8 fL; p=0.020). Patients on xabans (rivaroxaban and apixaban) had lower baseline PR compared to VKA and dabigatran (**Table 1**). One day after PVI, there was no significant change from PR baseline in all four groups (**Figure 1**).

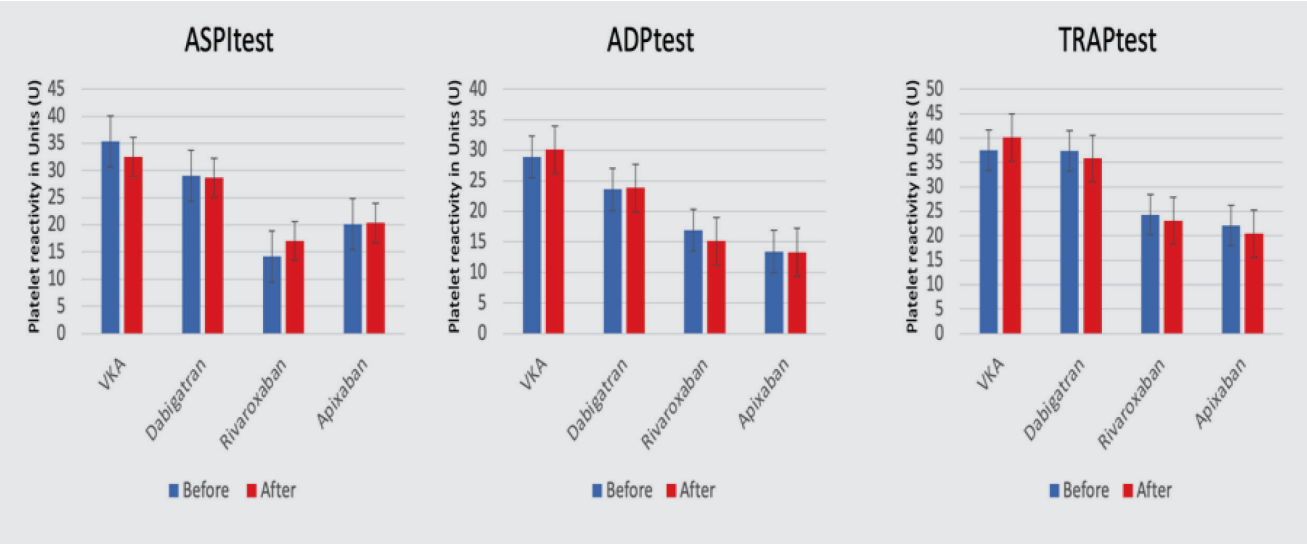

FIGURE 1. Platelet reactivity change one day after pulmonary vein isolation in patients on different oral anticoagulation.
ASPItest = assay for determination of platelet function triggered by arachidonic acid; ADPtest = assay for determination of platelet function triggered by adenosine diphosphate; VKA = vitamin K antagonist; TRAPtest = assay for determination of platelet function triggered by thrombin receptor activating peptide-6

Conclusion: Our results show that there is no significant effect of PVI on PR one day after the procedure regardless of chronic oral anticoagulation that was used. Lower basal PR was noted in patients on xabans compared to direct thrombin inhibitor and VKA. This antiplatelet mechanism is not fully understood but might be associated with multiple direct and indirect pathways which could contribute to potential differences in events between patients on certain DOACs. This warrants further investigation in seeking optimal DOAC choice for each patient.

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