Freeze or burn – platelets do not seem to care! Results from the SPARELIFE-CVD substudy

Petar Samardžić,
Laura Rudelj,
Ivo Planinc,
Hrvoje Jurin,
Vedran Velagić,
Maja Čikeš,
Boško Skorić,
Davor Puljević,
Jure Samardžić*,
Davor Miličić

University Hospital Centre Zagreb, University of Zagreb School of Medicine, Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE**: Jure Samardžić, Klinički bolnički centar Zagreb, Kišpatićeva 12, HR-10000 Zagreb, Croatia. / Phone: +385-98-537-864 / E-mail: jure.samardzic@gmail.com

ORCID: Petar Samardžić, https://orcid.org/0009-0006-7604-2989 • Laura Rudelj, https://orcid.org/0009-0009-7314-2783
Ivo Planinc, https://orcid.org/0000-0003-0561-6704 • Hrvoje Jurin, https://orcid.org/0000-0002-2599-553X
Vedran Velagić, https://orcid.org/0000-0001-5425-5840 • Maja Čikeš, https://orcid.org/0000-0002-4772-5549
Boško Skorić, https://orcid.org/0000-0001-5979-2346 • Davor Puljević, https://orcid.org/0000-0003-3603-2242
Jure Samardžić, https://orcid.org/0000-0002-9346-6402 • Davor Miličić, https://orcid.org/0000-0001-9101-1570

Introduction: Pulmonary vein isolation (PVI) is an established procedure to treat atrial fibrillation (Afib) but it increases periinterventional thromboembolic burden[1]. Literature provides ambiguous results about ablation effects on different hemostatic markers. The aim of this study was to assess the difference between two used PVI methods (cryoablation and radiofrequency ablation (RFA)) in postinterventional platelet reactivity (PR).

Patients and Methods: We analyzed PR in 168 consecutive patients undergoing PVI due to Afib in our institution using Multiplate function analyzer. Blood samples for PR measurements were drawn prior to the procedure and the on the following morning. In total, 123 and 45 patients underwent cryoablation and RFA, respectively. There was no difference in demographics and baseline platelet parameters between the groups (**Table 1**). 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.

TABLE 1. Baseline patient characteristics.

Patients' characteristics	Cryoablation (n=123)	Radiofrequency ablation (n=45)	p
Age, mean years (min-max)	58.3 (27-77)	60.8 (45-78)	0.17
Men, n (%)	89 (72.3)	27 (60.0)	0.12
BMI, kg/m², mean (min-max)	28.36 (22.0-38.2)	28.96 (23.5-37.2)	0.48
Paroxysmal Afib, n (%)	100 (81.3)	38 (84.4)	0.64
Arterial hypertension, n (%)	86 (69.9)	33 (73.3)	0.67
Hyperlipidemia, n (%)	61 (49.6)	21 (46.7)	0.74
Diabetes mellitus, n (%)	8 (6.5)	3 (6.7)	0.97
Renal dysfunction, n (%)	12 (9.7)	4 (8.9)	0.86
CHA_2DS_2-VASc, mean (min-max)	1.82 (0-6)	1.91 (0-5)	0.70
HAS-BLED, mean (min-max)	0.97 (0-3)	0.82 (0-3)	0.34
Platelets, x10^9/L, mean (min-max)	220.1 (108-339)	222.1 (138-379)	0.82
MPV, fL, mean (min-max)	10.44 (8.2-13.2)	10.25 (8.1-12.4)	0.42
PR before PVI			
ASPItest, U, mean	29.3	32.1	0.66
ADPtest, U, mean	23.9	28.9	0.36
TRAPtest, U, mean	35.4	38.3	0.71

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Results: Postprocedurally, PR was significantly lower in both groups after 24 hours. There were no statistically significant differences in PR values between the groups on the next day in all three tests (ASPItest 23U v 25U p=0.75; ADPtest 20U v 25U p=0.24; TRAPtest 29U v 34U p=0.47) (**Figure 1**).

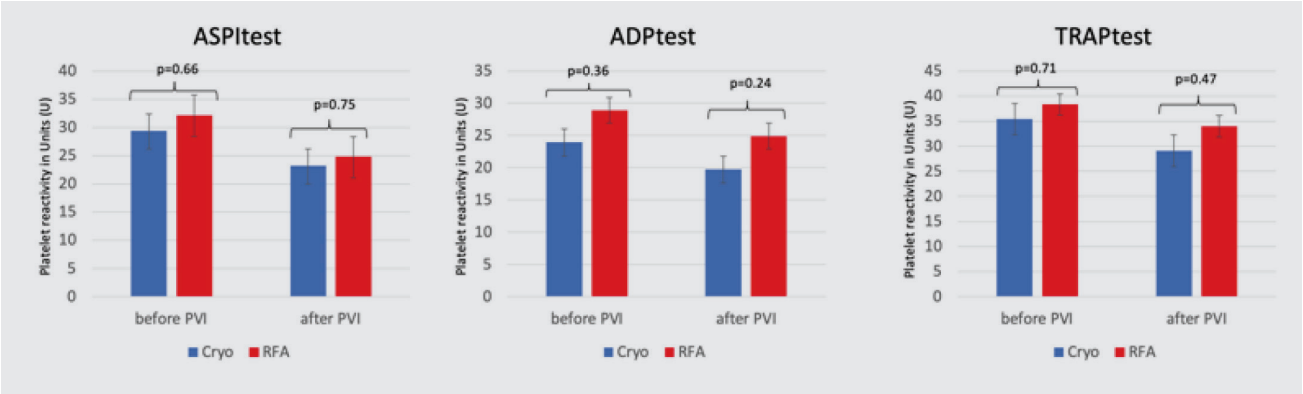

FIGURE 1. Platelet reactivity change one day after pulmonary vein isolation.
ASPItest - assay for determination of platelet function triggered by arachidonic acid; ADPtest - assay for determination of platelet function triggered by adenosine diphosphate; PVI – pulmonary vein isolation; RFA – radiofrequency ablation; TRAPtest - assay for determination of platelet function triggered by thrombin receptor activating peptide-6

Conclusion: Our results show that PR after PVI is lower after 24 hours regardless of the type of ablation. Insignificantly lower PR in cryo group might be due to less myocardial necrosis done with cryo compared to RFA. We hypothesize that the general similarity in PR drop could be predominantly a result of successful restoration of sinus rhythm in both groups which might be the prevailing factor in determining PR level in patients with Afib one day after ablation. These results should be confirmed with studies which would encompass early and late periinterventional PR measurements on a larger cohort of patients.

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LITERATURE

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