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Relationship between myocardial injury, inflammation and early, late recurrence after pulmonary vein isolation may be different between radiofrequency catheter ablation and cryoballoon ablation

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Background: High sensitive cardiac troponin I (hs-TnI), subunit of cardiac troponin complex, is a sensitive and specific marker of myocardium injury as troponin T. Several studies showed hs-TnI was associated with worse cardiovascular outcomes but relationship between serum hs-TnI level in patients with atrial fibrillation (AF) after pulmonary vein isolation (PVI) and AF recurrence remains unclear.
Methods: We enrolled 444 consecutive AF patients who underwent PVI from May 2017 to September 2018. We investigated the difference of relationship between serum hs-TnI, inflammation markers at 48 hours after PVI and early or late recurrence of AF (ERAF, <3 months and LRAF, during 1 year after PVI in patients with AF) between radiofrequency ablation (RFA) group and cryoballoon ablation (CBA) group.
Results: RFA and CBA were performed in 328 and 116 patients, respectively. There were no significant differences in patient characteristics between RFA group and CBA group. Serum hs-TnI in RFA group was significantly lower than in CBA group (1.93 ng/ml±3.28 vs 5.08 ng/ml±4.29, $p<0.001$), while hs-CRP was significantly higher in RFA group than CB group (1.97±2.38 mg/dl vs 1.10±0.84 mg/dl, $p<0.001$). The incidence of ERAF was similar between the two groups (RFA group: 26.8% and CBA group: 21.6%, p=0.262). There was no significant difference of hs-TnI and hs-CRP between patients with ERAF and without ERAF (table). In 213 patients who were followed during 1 year (PVIs were performed from May 2017 to January 2018, RFA 149 and CBA 64 patients), there was no significant association between hs-TnI, hs-CRP and incidence of LRAF (table).
Conclusion: CBA may cause more myocardial injury than RFA, on the contrary RFA may cause more inflammation than CBA. These markers did not affect ERAF and LRAF after PVI.

TnI and CRP between RFA and CBA

	RFA (n=328)			CBA (n=116)		P value
hs-TnI	1.93±3.28			5.08±4.29		<0.001
hs-CRP	1.97±2.38			1.10±0.84		<0.001
3 months follow-up	RFA (n=328)			CBA (n=116)		
	ERAF (+)	ERAF (–)	P value	ERAF (+)	ERAF (–)	P value
hs-TnI	1.68±1.90	2.02±3.66	0.410	5.03±3.17	5.10±4.56	0.943
hs-CRP	2.23±2.65	1.88±2.27	0.238	1.01±0.84	1.13±0.85	0.524
1 year follow-up	RFA (n=149)			CBA (n=64)		
	LRAF (+)	LRAF (–)	P value	LRAF (+)	LRAF(–)	P value
hs-TnI	1.61±1.77	1.87±2.69	0.570	4.71±2.14	5.60±5.69	0.664
hs-CRP	2.18±2.24	1.92±2.24	0.550	1.12±0.64	1.12±0.98	0.991