

Correlation between arterial function and left ventricular ejection fraction in heart failure

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Background/Aims: In patients with heart failure with reduced ejection fraction (HFrEF), there has been no study of correlation between arterial function and left ventricular ejection fraction (LVEF). In the present study, we analyzed the association between serial changes of LVEF and changes in arterial endothelial function and arterial stiffness in patients with HFrEF (LVEF <45%). **Methods:** We consecutively enrolled 50 patients with HFrEF (25 patients with non-ischemic heart failure [NIHF] and 25 with ischemic heart failure [IHF]). The echocardiography, B-type natriuretic peptide (BNP), flow-mediated dilation (FMD), and brachial ankle pulse wave velocity (baPWV) were assessed at baseline and at 6-month follow-up, and the change values (Δ) were evaluated. **Results:** Compared to the baseline measurements, the 6-month values of Δ LVEF, Δ BNP, Δ FMD, Δ baPWV were 10.0 ± 11.5 (from 32.7 ± 10.7 to 42.9 ± 13.4 , $p < 0.01$), -178.1 ± 278.3 (from 315.7 ± 299.2 to 126.1 ± 157.7 , $p < 0.01$), 0.86 ± 1.43 (from 2.44 ± 2.27 to 3.16 ± 2.27 , $p < 0.01$), -61 ± 224 (from 1545 ± 346 to 1488 ± 378 , $p = 0.07$), respectively. There was no significant association between initial LVEF and initial FMD ($r = 0.136$, $p = 0.35$), but there were significant correlations between 6-month LVEF and 6-month FMD ($r = 0.398$, $p < 0.01$) and Δ LVEF and Δ FMD ($r = 0.502$, $p < 0.01$). However, in patients with IHF, there was no significant correlation between LVEF and FMD during the study period. In patients with NIHF, there were significant correlations between LVEF and FMD in both the initial and 6-month studies ($r = 0.568$, $p < 0.01$; $r = 0.694$, $p < 0.01$), and Δ LVEF and Δ FMD ($r = 0.787$, $p < 0.01$). In multivariate analysis, only Δ FMD was significantly correlated with Δ LVEF, and was independent of other variables, Δ BNP, Δ baPWV, Δ systolic blood pressure, and Δ diastolic blood pressure in patients with NIHF (Table). There was no significant association between LVEF and baPWV. **Conclusions:** In patients with NIHF, there was significant correlation between serial changes of endothelial function and left ventricular systolic function. To the best of our knowledge, this is the first report to demonstrate a significant correlation between Δ FMD and Δ LVEF in patients with HFrEF.

Table. Results of the multivariable linear regression to assess the independent correlates of the delta flow-mediated dilation in patients with non-ischemic heart failure

	Unstandardized coefficient B	95% CI for B	Standardized coefficient β	p-value	VIF
Model F ratio=6.436, p < 0.01.					
Δ LVEF	0.115	0.049, 0.180	0.851	<0.01	2.594
Δ SBP	-0.014	-0.047, 0.018	-0.203	0.36	2.278
Δ DBP	0.041	-0.019, 0.101	0.342	0.17	2.798
Δ BNP	0.001	-0.002, 0.002	0.016	0.95	2.601
Δ baPWV	-0.001	-0.004, 0.003	-0.058	0.74	1.426

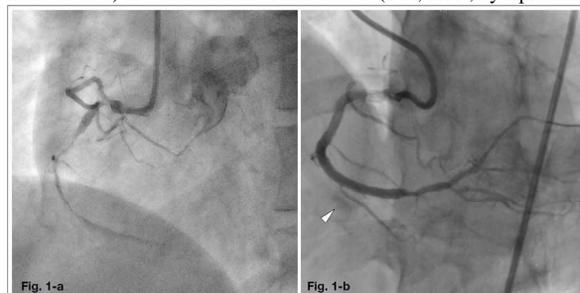
baPWV, brachial ankle pulse wave velocity; BNP, b-type natriuretic peptide; CI, confidence interval; DBP, diastolic blood pressure; LVEF, left ventricular ejection fraction; SBP, systolic blood pressure; VIF, variance inflation factor; Δ , delta value of

A Case of Post-cardiac Injury Syndrome with Chronic Pancreatitis

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Background: Post-cardiac injury syndrome is pericarditis with or without pericardial effusion resulting from injury to the pericardium. The clinical conditions considered under these terms include post-myocardial infarction syndrome, post-pericardiotomy syndrome, and post-traumatic pericarditis. And chronic pancreatitis is a syndrome involving progressive inflammatory changes in the pancreas that can result from chronic alcohol abuse. **Case:** A 58-years male with diabetes, hypertension, dyslipidemia and history of admission due to acute pancreatitis visited ER for chief complaint of epigastric pain. We performed echocardiography to make a differential diagnosis of IHD (ischemic heart disease) in consideration of risk factors (DM, HTN, dyslipidemia, age, current smoker). And hypokinesia at basal to midventricular inferior wall, basal inferoseptal wall is found on the test. We tried to perform PTCA (percutaneous transluminal coronary angioplasty) for subtotal occlusion at proximal RCA on CAG, but failed. Since then, we performed PCI at RCA on secondary CAG. 4 hours after the procedure, chest pain and hypotension occurred. There were decreased Hb on CBC, decreased heart sound, pericardial friction rub on stethoscope and pericardial effusion on echocardiography. We treated the patient by transfusion, dopamine, hydration. Vital sign stabilized but the patient had consistent symptoms of chest pain and epigastric pain. So, we did CT scan and found sustained pericardial effusion with no difference in amount. And there were also coarse calcification of pancreas and peripancreatic fluid collection which indicate chronic pancreatitis. We treated pericarditis and chronic pancreatitis by NSAIDs, pancreatic enzyme supplement. After that, the patient has improved and be discharged. **Conclusion:** We have to make a differential diagnosis of post-cardiac injury syndrome at the situation of chest pain and hypotension after PCI. If there were multiple risk factors and the symptom is ambiguous, we have to consider both cardiogenic disease and gastrointestinal disease. This report describes a case of unstable angina and post-cardiac injury syndrome with chronic pancreatitis.



1-a : RCA subtotal occlusion on initial CAG / 1-b : PCI at RCA was done. Oozing near RCA can be seen (arrow)

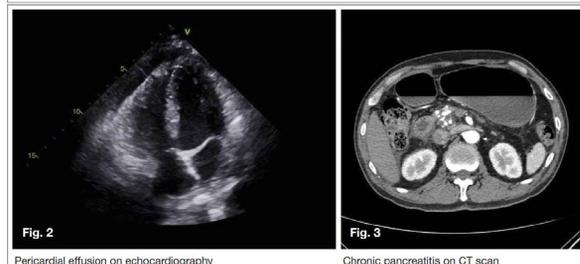


Fig. 2 Pericardial effusion on echocardiography

Fig. 3 Chronic pancreatitis on CT scan