The Association Between Epicardial Fat Thickness and Coronary Artery Calcification According to Blood Pressure Status in Non-Hypertensive Individuals

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Background: Epicardial adipose tissue represents visceral adiposity, while the coronary artery calcium score has been suggested as a reasonable surrogate for coronary atherosclerosis. Epicardial fat thickness (EFT) and blood pressure status can be attributed to coronary artery calcification. The present study was performed to evaluate the association between EFT and coronary artery calcification according to blood pressure status in non-hypertensive individuals.

Methods: The coronary artery calcium score (CACS) and echocardiographic EFT measurement were performed in a total of 1880 non-hypertensive individuals (1536 men; mean age, 44±8.3 years). Subjects were divided into quartiles according to EFT measurement. CACS was dichotomized by <400 and ≥400 and into two groups according to non-hypertensive individuals.

Results: The prevalence of CAC+ in pre-hypertensive individuals was 6.0%, 18.1%, 22.5%, and 29.9% in the lowest, second, third, and highest quartile EFT groups, respectively (p<0.001) and 7.3%, 13.2%, 13.9%, and 13.9% in non-hypertensive individuals (p=0.051). On multivariate regression analysis, the second, third, and highest quartile EFT groups had higher odds ratios (ORs) for the presence of CAC compared with the highest quartile (OR 95% confidence interval [CI], 3.904 [1.230, 12.385], 4.201 [1.274, 13.856], and 4.470 [1.409, 14.183], respectively), though only in pre-hypertensive individuals. Moreover, an increased absolute EFT level was associated with increased CACS in pre-hypertensive individuals (standardized β=0.109, p=0.023).

Conclusions: This study showed an independent relationship between epicardial fat thickness and coronary artery calcification in non-hypertensive individuals, with variable differences in this association according to blood pressure status.

Characteristics of Cardiac Dysfunction Associated with Acute Brain Hemorrhage

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Background: Cardiac dysfunction associated with brain hemorrhage was not well studied. We evaluated the incidence and characteristics of acute cardiac dysfunction related with acute brain hemorrhage.

Methods: Between January and September in 2013, consecutive patient who were diagnosed with acute spontaneous or traumatic brain hemorrhage and admitted to surgical ICU were prospectively enrolled. ECG, cardiac enzyme, and echocardiography was considered as acute cardiac dysfunction related with brain hemorrhage when all the following criteria were satisfied.

1. Accompanied ECG change and abnormal cardiac enzyme level
2. No previous history of cardiac disease
3. Regional wall motion abnormality extending beyond a single coronary arterial distribution

Otherwise, LV dysfunction was considered as cardiac dysfunction not related with brain hemorrhage. Clinical characteristics, laboratory findings, and in-hospital outcome were retrospectively reviewed.

Results: Total of 107 patients (age: 59±16 years, 64 men) were collected, LV systolic dysfunction on echocardiography was observed in 18 patients. Among them 11 (10%) patients were classified as having acute cardiac dysfunction related with brain hemorrhage, while 5 patients in 11 patients with acute cardiac dysfunction showed typical apical balloning, 6 patients showed inverted takotsubo pattern. Other abnormalities were observed in ECG, cardiac enzyme level and echocardiography were shown in the table. In-hospital mortality was observed in 19 (18%) patients. 6 patients in 11 patients with acute cardiac dysfunction had in-hospital mortality (p=0.004).

Conclusions: Acute cardiac dysfunction associated with acute brain hemorrhage was observed in 10% of patients and half of them showed inverted takotsubo pattern.
Mitral Valve Obstruction by Rapid Regrowth of Left Atrial Myxoid Fibrosarcoma after Surgical Resection

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Malignant primary cardiac tumor is rare and the most common form is sarcomas. However, myxoid sarcoma in the heart is very rare and differential diagnosis from cardiac myxoma is often difficult. Here, we reported a case of rapid regrowth of left atrial tumor after surgical resection which was finally diagnosed as cardiac myxoid fibrosarcoma. An 82-year-old man, who underwent resection of cardiac tumor 3 months ago, visited due to severe dyspnea and peripheral edema. He was diagnosed as mitral valve obstruction due to regrowth of huge left atrial tumor by trans-thoracic echocardiogram and contrast chest computer tomography (Fig A, B). The patient had second resection and the resected tumor was pathologically compatible with myxoid fibrosarcoma which was absolutely different diagnosis compared with previous histopathological results (Fig C, D). After the second operation, the patient had been had radiological therapy for heart tumor at out patient clinic for 6 months. Some fibrosarcomas with abundant myxoid stroma have been called myxoid fibrosarcoma but are not considered malignant variants of cardiac myxoma. It is very hard to distinguish the myxoid fibrosarcoma from the benign myxoma by histopathologically. Therefore, we always have to pay more attention and use multi-modality approach to diagnosis of intracardiac tumor.

Congenital Partial Absence of the Pericardium Complicating with Phrenic Nerve Damage during Pericardial Resection

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Introduction: Congenital absence of the pericardium is rare cardiac defect with a wide spectrum of clinical presentation. We present a case of partial congenital absence of the pericardium that was diagnosed with cardiac CT angio and suggested left phrenic nerve injury during operation.

Case: A 58 year-old women with no past medical history was admitted to the cardiology department complaining of frequent resting angina. She had a history of chest trauma, a left rib fracture that occurred in a traffic accident 2 years previously. Physical examinations were normal. ECG showed 49 beats/minute sinus bradycardia, V1~V4 T wave inversion. Chest radiograph showed normal. Laboratory investigations revealed mild leukocytosis (10.41*10⁹/L). Echocardiography showed abnormal wall motion of focal mid RV free wall associated with extracardiac compression. Coronary angiography was normal. We decided to perform partial pericardial resection. Postoperative chest X-ray findings revealed elevated left diaphragm. We suggested left phrenic nerve injury during operation. But the patient had no associated symptom. Follow-up transthoracic echocardiography was done and the wall motion abnormalities and external compression which were observed in previous study were no longer seen. We decided outpatient department follow-up and the patient was discharged on the six postoperative days with symptom free state.

Discussion: The prevalence of congenital absence of the pericardium, including cases with other congenital cardiopulmonary anomalies, has been described as only 0.002–0.044% of surgical/pathologic investigations. All types of congenital pericardial defect can lead to serious complications such as incarceration of cardiac tissue, myocardial ischemia, aortic dissection or valvular insufficiency. Phrenic nerve injury was observed from 0.5% to 1.7% undergoing closed cardiac procedures. In general, these injuries gradually resolve spontaneously over time.

Table 1. Observed cardiac abnormalities

<table>
<thead>
<tr>
<th>Abnormal findings</th>
<th>N = 107</th>
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<tbody>
<tr>
<td>ST segment elevation on ECG</td>
<td>15 (14%)</td>
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<tr>
<td>ST segment depression or T wave inversion on ECG</td>
<td>10 (9%)</td>
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<tr>
<td>Cardiac enzyme elevation</td>
<td>30 (28%)</td>
</tr>
<tr>
<td>Acute LV systolic dysfunction</td>
<td>11 (10%)</td>
</tr>
<tr>
<td>LV hypertrophy on echocardiography</td>
<td>48 (45%)</td>
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