0428

Ferric iron deposits: cause or consequence of calcifications?

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Aims: The presence of intravalve hemorrhage close to calcium crystals has recently been described in calcified aortic valves histologic slides. Those hemorrhages can play a pathogenic and initiating role in calcification process but they could also be a mere consequence of the mechanical damage due to calcifications. We aimed at assessing whether iron deposits are present both in calcified valves and non calcified valves.

Methods and results: Aortic valves deriving from patients operated at the Bichat Hospital were consecutively (February-April 2014) included in our study (Table 1). We have developed a morphologic analysis technique in 3D whole mounts, using Perl's blue staining for ferric iron and Alizarin red staining for calcium crystals, in situ. The valves are optically clarified using benzyl benzoate prior to analysis.

Results: Ferric iron staining was positive in 18/20 (90%) non-calcified valves. Ferric iron deposits were present in 93% of calcified valves (78% in the group « severe aortic stenosis » and 100% in the group « moderate aortic stenosis »). Ferric iron deposits displayed two types of pattern: either in « close contact » with calcium crystals (74%), or located within the healthy tissue, « distant » from the calcium crystals (42.5%). Both types of pattern were concomitantly present in 30% of all calcified valves.

Conclusion: Our study shows that ferric iron deposits can be found in non-calcified valves, suggesting that hemorrhage are not necessarily a consequence of valve calcification. The iron deposits that are not spatially associated with calcium crystals may precede the development of calcifications, possibly playing an active role.

Abstract 0428 – Table: Baseline characteristics

<table>
<thead>
<tr>
<th>Type of procedure</th>
<th>Nb (men)</th>
<th>Mean age, years</th>
<th>Mean gradient, mmHg</th>
<th>Macroscopically calcified valves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aortic valve</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>replacement</td>
<td>45 (22)</td>
<td>72.5</td>
<td>46.7</td>
<td>45</td>
</tr>
<tr>
<td>Severe aortic</td>
<td>40 (18)</td>
<td>73</td>
<td>49.5</td>
<td>40</td>
</tr>
<tr>
<td>stenosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate aortic</td>
<td>5 (4)</td>
<td>71.5</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>stenosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bentall</td>
<td>16 (14)</td>
<td>53</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>procedure</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Explanted heart</td>
<td>4 (4)</td>
<td>62</td>
<td>–</td>
<td>0</td>
</tr>
</tbody>
</table>

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Infective endocarditis complicated by heart failure: characteristics and prognosis

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Introduction: Despite progress in the field of antibiotic prophylaxis, infective endocarditis (IE) remains a common and serious disease. Heart failure (HF) represents the most common cause of death in this pathology.

Objective: We aimed to analyse the characteristics and prognosis of patients with left-sided native valve IE complicated by HF and to evaluate the impact of early surgery on 1 year outcome.

Patients and methods: It is about a single-center observational study that included 241 patients admitted for definite left-sided native valve IE according to the Duke criteria. We are interested in the subgroup of 85 patients with heart failure.

Results: The average age of our patients was 42±18 years. When compared with patients without CHF (n = 156), new heart murmur, high comorbidity index, aortic valve IE, and severe valve regurgitation were more frequently observed in HF patients. Aortic valve IE, elderly patients were more frequent in HF patients. Congestive HF was independently predictive of in-hospital mortality (OR=3.1, IC 95% (1.9-8.2); p = 0.007). Early surgery was performed in 51% of HF patients with a peri-operative mortality of 19%. In the HF group, anemia [OR=4, IC 95% (0.9-17); p = 0.05], uncontrolled infection [OR=4, IC 95% (0.9-16.2); p= 0.05], and major neurological events (OR=9, IC 95% (1.4-21.6); p< 0.019) were multivariate predictors of 1 year mortality. Early surgery was independently associated with improved 1 year survival [HR=0.41 (0.17-0.73); p = 0.02].

Conclusion: Native valve IE complicated by HF is more frequent in aortic IE and is associated with severe regurgitation. Congestive HF is an independent predictor of in-hospital and 1 year mortality. In HF patients, early surgery is independently associated with reduced mortality and should be widely considered to improve outcome.

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Platypnea orthodeoxia syndrome: focus on predisposing anatomical factors

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Platypnea orthodeoxia syndrome (POS) is a rare situation with hypoxia and breathlessness varying between upright and recumbent position. A mechanical inter-atrial septum distortion, causing redirection of flow from the right to the left atrium through a patent foramen ovale (PFO), despite normal pulmonary pressure, is suggested to explain POS. Prevalence of predisposing anatomical factors remain little known.

Methods: All patients who underwent a PFO closure for a POS were retrospectively included from 2 CHU. Aetiologies were investigated.

Results: 67 patients (Median age 72 y.o., interquartile 61-80; 58.2% men) were included. All patients had dyspnea (76.2% NYHA III or IV, 53.7% under oxygen-therapy). The remaining patients had a refractory hypoxemia (38.2%) without POS. The most frequent predisposing anatomical factor was an enlarged or unwound aorta (n=29, 43.3% 95CI 31.2-56.0) with an aortic aneurysm in 25 patients (37.3%, 95CI 25.8-50.0). Other factors identified were pneumonectomy (n=8, 11.9% 95%CI 5.3-22.2), a history of cardiac surgery (n=7, 10.5%, 95CI 4.3-20.3), mechanical ventilation (n=6, 9.0% 95CI 3.4-18.5), kyphoscoliosis (n=4, 6.0% 95CI 1.7-14.6), hepatomegaly (n=4, 6.0% 95CI 1.7-14.6), 2 patients with hepato-renal polycystic disease, one hemochromatosis and one cirrhosis , right ventricle failure (n=3,0% 95CI 0.4-10.4), pericardial effusions (n=2,0% 95CI 0.4-10.4), right ventricle arhythmogenic dysplasia (n=2,3% 95CI 0.4-10.4), diaphragmatic paralyse (n=1, 1.5% 95CI 0.1-8.0) , carcinoid syndrome with tricuspid regurgitation (n=1, 1.5% 95CI 0.1-8.0) , a right atrium pace-maker lead (n=1, 1.5% 95CI 0.1-8.0) and a takotsubo syndrome (n=1, 1.5% 95CI 0.1-8.0).

Conclusion: Aortic aneurysm and pneumonectomy are the most frequent and well known situation leading to a POS. Other causes less known were observed such as hepato-renal polycystic kidney, or atrial pacemaker probe that may be underdiagnosed in clinical practice.

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