214 Searching for optimal indices of right ventricular overload in prognosis prediction in patients with acute pulmonary embolism

M. Szuk, G. Styczynski, M. Kostubiec, A. Bochowicz, H. Gurba, A. Kuch-Wocial, A. Kaczynska, P. Pruszczyk. The Medical University of Warsaw, Internal Medicine, Hypertension and Angiology, Warsaw, Poland.

Objective: Echocardiographically detected right ventricular (RV) dysfunction is a general feature in native patients with acute pulmonary embolism (APE). However, there is no agreement which parameters of RV overload are the most important. Therefore we assessed generally measured indices of RV overload in prediction of complicated in-hospital course after APE.

Material and Method: We investigated 96 normotensive on admission patients (25M, 71F, aged 62±18 years) with proven APE. On admission TTE was performed for the assessment of RV diameter, RV/LV, IVC, tricuspid valve peak systolic gradient (TVPG), acceleration time of pulmonary ejection (Act) and RV hypokinesis.

Results: Eight pts died during hospitalization due to PE, 19 pts experienced in hospital clinical serious adverse event (SAE) (at least one of death, thrombolyysis, cardiology pulmonary resuscitation, intravenous use of catecholamines). Multivariable logistic analysis showed that only independent predictors of SAE are TVPG (OR 1.04 CI95%: 1.01-1.06 p=0.02) and Act (OR 0.97 CI95%: 0.96-0.99 p=0.003) and for death is IVC (OR 1.25 CI95%: 1.04-1.05 p=0.01). We tested several combination of RV overload criteria and the best predictor of PE related death was RV overload (RI)= defined by RV/LV < 0.6 with RV hypokinesia and/or TVPG>30mmHg with Act>70ms (OR 5 CI95%: 1.2-21.4 p=0.01).

Preliminary RVRI was found in 60 (61%) pts and predicted SAE with OR 4.2 (CI95%: 1.1-16.0 p=0.03).

Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>All pts</th>
<th>SAE p</th>
<th>Non-SAE</th>
<th>Survivors p</th>
<th>Non survivors p</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV</td>
<td>32±10</td>
<td>NS</td>
<td>32±10</td>
<td>NS</td>
<td>35±11</td>
</tr>
<tr>
<td>RV/LV</td>
<td>0.73±0.22</td>
<td>NS</td>
<td>0.72±0.21</td>
<td>NS</td>
<td>0.69±0.20</td>
</tr>
<tr>
<td>RVG</td>
<td>19±6</td>
<td>0.02</td>
<td>16±6</td>
<td>0.004</td>
<td>20±7</td>
</tr>
<tr>
<td>TVPG</td>
<td>35±18</td>
<td>0.01</td>
<td>34±16</td>
<td>0.002</td>
<td>46±15</td>
</tr>
<tr>
<td>Act</td>
<td>75±31</td>
<td>0.01</td>
<td>71±29</td>
<td>0.003</td>
<td>58±12</td>
</tr>
<tr>
<td>RV hypokinesis</td>
<td>27%</td>
<td>0.07</td>
<td>36%</td>
<td>0.01</td>
<td>25%</td>
</tr>
</tbody>
</table>

Right ventricular overload parameters in patients with APE

Conclusions: Although Act and TVPG predict SAE, the complex echocardiographic criterion of RV overload consisting of TVPG, Act, RV/LV and RV hypokinesis, seems to be the most powerful prognostic predictor.

215 The value of echocardiographic test with nitric oxide (NO) in assessment of vasodilator responsiveness in patients with idiopathic pulmonary arterial hypertension (IPAH)

A. Fijalkowska, J. Burszkołwi, M. Kurzyza, G. Szczygielski, J. Kobier, A. Torbicki. 1 Inst. of TB and Lung Diseases, Dept. of Chest Medicine, Warsaw, Poland; 2Medical University of Warsaw, General and Experimental Pathology, Warsaw, Poland.

Testing of vasoreactivity is an important part of evaluation of patients with IPAH. Although left atrial volume has been shown to express the severity of RV diastolic dysfunction, similar associations between the right atrium (RA) and right ventricle (RV) have not been examined. We sought to determine the relationship between RA volume and RV diastolic function. Patients: The ADEPT (Assessment of Doppler Echocardiography for Prognosis and Therapy) Trial enrolled 167 patients (mean age 57±14 yrs) with LV ejection fraction < 35%. On transthoracic echocardiogram (TTE), RA volume was calculated from the apical 4-chamber view using Simpson’s method. Stage of RV diastolic dysfunction was determined using tricuspid inflow and RA area, to differentiate stage 0 (normal) from stage II (pseudonormal). RV diastolic function was classified as stage 0 (normal) in 15%, stage I (abnormal relaxation) in 20%, stage II (pseudonormal) in 30% and stage III (restrictive) in 26% of patients. TTE variables including RA volume indexed to body surface area (RAVI) were compared between these groups.

Methods: Mean RAVI was 29±17 ml/m². RAVI was correlated positively with LA volume, LV end-diastolic volume, RV function, and negatively with LVEF, hepatic vein S wave velocity and tricuspid annular tissue Doppler S' and A' velocities (all p < 0.001). There was a progressive increase in RAVI as the severity of RV diastolic dysfunction worsened (Figure 1). Mean RAVI was 15±5 ml/m² in stage 0, 22±10 ml/m² in stage I and 32±14 ml/m² in stage II and 39±17 ml/m² in stage III (p < 0.001).

216 Right-sided endocarditis in non-addicts: analysis of 38 cases

Z. Wlaksza, M. Lengel, A. Semmelweis University, Dept. of Cardiology, Budapest; Unginszky J. Guthmann G. Hung Inst. of Cardiology Budapest, Hungary.

Right-sided endocarditis (RE) is rarely described in non-addicts. 38 cases were diagnosed by transesophageal echocardiography (TEE) between 1993 and 2000, and followed clinically for mean 239 days. There were 20 males, 18 females, mean age 48 years. No patient was intravenous drug addict. Group I pts had pacemaker electrodes (12), group II intracardiac catheters (CAI) (11), group III pts right sided prosthesis valve or organic disease (9), group IV had no cardiac anomaly (6). Early RE (within 1 month) developed in 2 and 4 pts in group I and II, late RE occurred 1.4±0.8 (mean 0.8) months after the implantation of the device (II). Transesophageal echocardiography was positive in 8, 7±0, 5 cases in the groups, resp. Blood culture (BC) was positive in 30 cases; Staph. aeur., (11), Staph. coag. neg. (10), Entere- coccius (4), others (5). NO BC was performed in 6, and it was negative in 3 cases. There was no difference in BC between the four groups (NS). The mean maximal length of the vegetations (VEG) in group II was 25 mm, which was significantly (p<0.005) greater than in groups in 15 mm, 11±17 mm, 19±3 mm, resp. There was no correlation between BC and the size of the VEG (p<0.02). Outbreak of RE was the following: 12 pts were operated (1-84, mean 16 days after the TEE), 5 PM electrodes, 2 IV lines, and 5 native tricuspid valve surgery and valvectomy were performed because of antibiotic resistant RE. 23 pts were clinically cured by ade-quate antibiotic treatment. 19 of the VEG's disappeared, 2 decreased and 2 were unchanged. Mild moderate and significant tricuspid insufficiency (TI) were found in 10 and 8 cases at the time of diagnosis, All significant TI remained unchanged, 1 of the mild TI increased, without right-sided heart failure. There were 3 early deaths (1-12 days within TEE diagnosis), none of them were associated to RE.

Conclusions: - RE may develop in non-addicts without cardiac anomaly or Intracardiac D. - In most pts with intracardiac D the RE was not nosocomial. - Surgery is indicated inreque: only if the disease is not controlled by adequate antibiotic treatment. The degree of valve damage or the size of the VEG is no indication for surgery.

217 Right atrial volume is a marker of right ventricular diastolic dysfunction: an ADEPT trial subatudy

J.A. Salbach, J.H.W. Tang, T. Porter, A.G. Borowski, M. Martin, R.W. Troughton, S. Bhavnani, A.L. Klein. on behalf of The ADEPT Investigators. 1 Saint Louis University Hospital, Division of Cardiology, St Louis, United States of America; 2Cleveland Clinic Foundation, Cardiology, Cleveland, United States of America; 3Cleveland Clinic Foundation, Cardiology, Cleveland, United States of America; 4University of Otago, Cardiology, Christchurch, New Zealand.

Background: Although left atrial volume has been shown to express the severity of left ventricular (LV) diastolic dysfunction, similar associations between the right atrium (RA) and right ventricle (RV) have not been examined. We sought to determine the relationship between RA volume and RV diastolic function.

Methods: The ADEPT (Assessment of Doppler Echocardiography for Prognosis and Therapy) Trial enrolled 167 patients (mean age 57±14 yrs) with LV ejection fraction < 35%. On transthoracic echocardiogram (TTE), RA volume was calculated from the apical 4-chamber view using Simpson’s method. Stage of RV diastolic dysfunction was determined using tricuspid inflow and RA area, to differentiate stage 0 (normal) from stage II (pseudonormal). RV diastolic function was classified as stage 0 (normal) in 15%, stage I (abnormal relaxation) in 20%, stage II (pseudonormal) in 30% and stage III (restrictive) in 26% of patients. TTE variables including RA volume indexed to body surface area (RAVI) were compared between these groups.

Results: Mean RAVI was 29±17 ml/m². RAVI was correlated positively with LA volume, LV end-diastolic volume, RV function, and negatively with LVEF, hepatic vein S wave velocity and tricuspid annular tissue Doppler S' and A' velocities (all p < 0.001). There was a progressive increase in RAVI as the severity of RV diastolic dysfunction worsened (Figure 1). Mean RAVI was 15±5 ml/m² in stage 0, 22±10 ml/m² in stage I and 32±14 ml/m² in stage II and 39±17 ml/m² in stage III (p < 0.001).

Figure 1.

Conclusions: In patients with significantly depressed LV systolic function, RAVI expressed the severity of RV diastolic dysfunction. This new echocardiographic marker can be used to identify patients with abnormal RV diastolic function.