Determining the optimal ATP test's end-point in syncope of unknown origin: findings from a multicenter study

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Background: Extracellular adenosine-5'-triphosphate (ATP) suppresses cardiac pacemakers' automaticity and AV nodal conduction directly and indirectly by adenosine and a triggered cardiac-vagal reflex. This action constitutes the rationale for the ATP-test, a diagnostic tool aimed to identify patients with syncope of unknown origin (SUO) who could benefit from pacemaker therapy. Two criteria have been used to determine a positive outcome of the ATP test: (i) the duration of ATP-induced cardiac pause (CP) due to AV nodal conduction block or suppressed sinus node, ignoring escape beats, and (ii) the maximal RR interval irrespective of the origin of the QRS complexes (RRmax). The test is deemed positive when CP is >10 sec or RRmax >6 sec. Two contrasting conclusions regarding the utility of the test have been reached using these two criteria. The aim of the study was to explain the discrepancy between the two conclusions.

Methods: ATP test consists on an IV bolus injection of 20 mg of ATP into an antecubital vein. We analyzed data of 33 patients-cohort derived from a multicenter study having incorporated 80 SUO patients (Circulation 2012;125:51-61) in which the ATP-test was positive using the CP duration and negative using the RRmax interval. The 47 remaining patients had both tests positive and were excluded from this analysis.

Results: A dual chamber pacemaker was implanted in all 33 patients: in 14 and 19 patients the pacemaker was programmed for DDD70 bpm and AAI30 bpm (control) pacing modes, respectively. Syncope recurred in only one of the 14 DDD70 patients (7%) during a follow up period of 17.0±3.6 months, but in 10 of the 19 AAI30 patients (53%) during 5.3±5.2 months (p<0.009).

Conclusion: This study shows that ATP-test is a useful diagnostic tool for identifying patients with bradyarrhythmic syncope who might benefit from pacing therapy when the CP criterion -and not the RRmax criterion- is used to determine the outcome of the test.

Table 1 – Results

<table>
<thead>
<tr>
<th>CHADS&gt;0</th>
<th>CHADS=1</th>
<th>CHADS &gt;= 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=15</td>
<td>n=14</td>
<td>n=16</td>
</tr>
<tr>
<td>median (IQR)</td>
<td>median (IQR)</td>
<td>median (IQR)</td>
</tr>
<tr>
<td>BNP (pg/ml)</td>
<td>244 (96-378)</td>
<td>394.5 (120-524)</td>
</tr>
<tr>
<td>ANP (pmol/l)</td>
<td>108.9 (86.56-188.9)</td>
<td>257.2 (122.6-391.4)</td>
</tr>
<tr>
<td>Troponin I (ng/ml)</td>
<td>0.04 (0.04-0.04)</td>
<td>0.04 (0.04-0.04)</td>
</tr>
<tr>
<td>Copeptine (pmol/l)</td>
<td>7.39 (5-9.48)</td>
<td>8.005 (5-17.21)</td>
</tr>
<tr>
<td>Hs CRP (mg/l)</td>
<td>3 (1.53-10)</td>
<td>4.085 (1.96-10)</td>
</tr>
<tr>
<td>D - dimer (ng/ml)</td>
<td>267 (215-566)</td>
<td>682 (250-751)</td>
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Copeptine in non valvular atrial fibrillation: A new marker of increased risk of thromboembolism

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Non valvular atrial fibrillation (NVAF) is associated with an increased risk of stroke. CHADS2 score is used to guide thromboprophylaxis among patients with NVAF. Copeptine a vasoactive peptide reflecting cardiac stress has been recently evaluated in combination with Troponin to exclude the diagnosis of acute coronary syndrome but had never been tested in atrial fibrillation. We evaluated the relation between the CHADS2 score and several biomarkers representing multiple pathways implicated in non valvular atrial fibrillation.

Methods: Plasma concentrations of Troponin I (Tnl), BNP, mid-regional proatrial natriuretic peptide (MR-proANP), hs-CRP, D-dimer and mid-copeptine (CT-proAVP) were measured at the time of admission in 45 NVAF consecutive patients. The association between the median values of these markers, clinical characteristics, transthoracic echocardiographic parameters and stroke risk stratification as assessed by the CHADS2 score was tested.

Results: Baseline patients characteristics were as follows: mean age was 64.6±14.9 years, 56% were men, 51% had hypertension, and 7% had diabetes. In seven patients (16%) NVAF was associated with acute heart failure. Thirteen patients (29%) had a prior AF. NVAF was paroxysmal in 67% of patients. Mean LV EF was 54.3±15.7% and mean LA surface was 21.6±7.1 cm².

Mean CHADS2 score was 1.1±1

Table 1 depicted the level of each biomarkers according to the CHADS2 score ANP, Copeptine, hs-CRP, D-dimer levels were increased with the increased of the CHADS2 score.

Conclusion: Copeptine levels were found to be higher in patients at higher risk of thromboembolism as assessed by CHADS2 score.

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Women with atrial flutter differ from men

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The management and prognosis of heart diseases (HD) or arrhythmias may depend on the patient gender. The purpose of the study was to look for the influence of gender on the indications and the long-term results of ablation of atrial flutter (AFI).

Methods: 965 patients, 743 males, 222 females (23%), mean age 64±12 years were consecutively referred for radiofrequency ablation of recurrent