Potassium canrenoate prevents aldosterone-induced hypoxia-reoxygenation injury in isolated human right atrial myocardium in vitro

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Introduction: Atrial fibrillation (AF) is the most common complication after cardiac surgery and is responsible for significant morbidity and mortality. To assess whether preconditioning with renin-angiotensin-aldosterone system agents could limit myocardial tissue injury, we tested the force of contraction of human right atrial trabeculae during hypoxia-reoxygenation when exposed to aldosterone and/or potassium canrenoate.

Materials and methods: We studied the effect of aldosterone and/or mineralocorticoid receptor (MR) antagonist potassium canrenoate administration prior to hypoxia-reoxygenation and in normoxic condition on force of contraction in 51 human right atrial trabeculae obtained from patients scheduled for coronary artery bypass surgery or aortic valve replacement. We also tested if adrenochrome exposure results in changes in levels of ERK1/2 phosphorylation.

Results: The force of contraction of trabeculae was significantly reduced by aldosterone administration under normoxic or hypoxia-reoxygenation conditions. The rapid onset of this effect – 25 minutes – suggests a nongenomic mechanism. When compared with controls, potassium canrenoate by itself was not able to induce cardioprotection. However, coadministration of aldosterone and potassium canrenoate preconditioned isolated human atrial myocardium exposed to hypoxia – reoxygenation. This effect could be MR-dependent or not because both aldosterone and potassium canrenoate have some nongenomic MR-independent actions. Preliminary results showed that adrenochrome exposure increased ERK1/2 phosphorylation levels.

Conclusion: Potassium canrenoate-induced cardioprotection prevents the deleterious effect of aldosterone on human atrial myocardial tissue. Further research required to determine the mechanism involved and the potential beneficial in clinical practice in order to reduce the incidence of postoperative atrial fibrillation.

Can the “Bleeding Academic Research Consortium” (BARC) classification be applied to pulmonary embolism?

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Background: Bleeding is associated with higher risk of adverse outcomes in pulmonary embolism (PE). The “Bleeding Academic Research Consortium” (BARC) developed a classification of events combining laboratory & clinical parameters, but based on acute coronary syndrome patients. We investigated whether this classification is applicable in the context of PE, where no standard bleeding definition exists.

Methods: Prospective, single-center registry of patients with confirmed PE. We excluded BARC types 1 or 4 bleeding, considered not to be applicable to the context of PE. BARC type 2 bleeds were defined as any overt bleeding requiring non-surgical or medical care, or leading to hospitalisation. Type 3 bleeds were defined as drop of >3 g/dL in haemoglobin, any transfusion, tamponnade, intra-cranial hemorrhage, or bleeding requiring surgical intervention. Type 5 bleeds were defined as any fatal bleed.

Results: From 2007 to 2011, 666 patients with confirmed PE were included; average age 66±18 years; 52% women; 25% low-risk; 61% intermediate-risk and 14% high-risk PE. Treatment was: unfractionated heparin in 93 (14%), enoxaparin in 200 (30%), fondaparinux in 373 (56%). Thrombolysis was given in 167 (25%). Sixty patients (9%) experienced bleeding (n=13, 43, 4 for BARC types 2, 3, 5 respectively). Main in-hospital events are shown in table 1. By multivariate analysis, independent predictors of in-hospital death were: cardiogenic shock (OR 12.6 [4.8-20.8]); chronic obstructive pulmonary disease (OR 5.27 [2.25-8.43]); acute right ventricular dysfunction (OR 2.98 [1.25-6.96]) and any bleeding (BARC 2,3,5) (OR 3.15 [1.34-7.37]).

Conclusion: Our data suggest that the BARC classification can be applied to acute PE and that bleeding is associated with unfavourable in-hospital outcome. We suggest use of the BARC as the standard for classification of bleeding events in PE.

Table – Results

<table>
<thead>
<tr>
<th>BARC type</th>
<th>BARC type No bleed p (A) vs (C) p (B) vs (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 (A)</td>
<td>3/5 (B)</td>
</tr>
<tr>
<td>Death</td>
<td>0 2 (15.4%) 7 (15%) 19 (3.1%) 0.034 0.0014</td>
</tr>
<tr>
<td>Recurrent PE</td>
<td>0 4 (8.5%) 5 (0.9%) 0.67 &lt;0.0001</td>
</tr>
<tr>
<td>Treatment escalation</td>
<td>1 (7.7%) 2 (4.2%) 4 (0.7%) 0.017 0.028</td>
</tr>
</tbody>
</table>

Prevalence, awareness, treatment and control of hypertension in a self-selected sub-Saharan African urban population: A cross-sectional study

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**Objective:** Hypertension has been established as a major public health problem in Africa, but its specific contributions to disease burden are still incompletely understood. We quantified the burden and determinants of hypertension, detection, treatment and control rates among adults in major cities in Cameroon.

**Patients and methods:** This was a cross-sectional and community-based multicenter study in major cities in Cameroon. Participants were self-selected urban dwellers from the Center, Littoral, North-West and West Regions, who attended on May 17th 2011 a screening campaign advertised through mass media. Primary outcome measure was hypertension defined as systolic (and/or diastolic) blood pressure ≥140/90 mmHg, or ongoing blood pressure (BP) lowering medications.

**Results:** In all, 2120 participants (1003 women) were included. Among them, 1007 (prevalence rate 47.5%) had hypertension, including 319 (awareness rate 31.7%) who were aware of their status. The prevalence of hypertension increased with age overall and by sex and region. Among aware hypertensive subjects, 191 (treatment rate 59.9%) were on regular BP lowering medication, and among those treated, 47 (controlled rate 24.6%) were at target BP levels (i.e. systolic (and diastolic) BP <140 (90) mmHg). In multivariable logistic regressions analysis, male gender, advanced age, parental history of hypertension, diabetes mellitus, elevated waist, and elevated body mass index (BMI) were significant predictors of hypertension. Likewise, male gender, high BMI and physical inactivity were associated with poor control.

**Conclusions:** High prevalence of hypertension with low awareness, treatment and control were found in this urban population; these findings are significant and alarming with consideration to the various improvements in the access to healthcare and the continuing efforts to educate communities over the past decades.

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**Control of hypertension in a large population of Blida, Algeria**

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**Objective:** We are presenting the main results of the study regarding the hypertension control rate in a large sample of hypertensive patients at cardiology center of Blida. Algeria

**Methods:** In the cross-sectional questionnaire-based observational study we have included 1184 hypertensive patients (56.3% females, mean age 54.0±11.1 years) attending a routine visit in specialist care. To be included patients had to be ≥22 years old and had to be treated for at least 12 months with antihypertensive drugs. Blood pressure (BP) was measured twice in a seated position according to ESH/ESC guidelines and mean value was calculated. The controlled hypertension was defined as BP level below 140/90 mmHg. Selected demographical and clinical data were evaluated.

**Results:** Among studied patients hypertension control rate was 36.7%. There were no significant differences in control rates between primary care and specialist care patients and between men and women. Patients with obesity (BMI ≥30 kg/m²) or abdominal obesity (ESH/ESC 2007 criteria) had lower rates of controlled hypertension as compared with patients without obesity or abdominal obesity (47.3% vs 52.1%, p = 0.01 et 46.2% vs 51.7%, p < 0.001 respectively). Patients with diabetes as well as patients with coronary artery disease (CAD) or cerebrovascular disease (CVD) had lower hypertension control rates in comparison with patients without these diseases (32.6% vs 38.9%; p = 0.001, 25.3% vs 29.1%,p = 0.001 and 23.8% vs 36.2%; p = 0.03 for diabetes, CAD and CVD respectively).

**Conclusion:** Our results showed that 36.7% of hypertensive patients treated for at least 1 year achieved blood pressure control. Patients at higher cardiovascular risk (established cardiovascular disease, diabetes or obesity) had lower BP control rates.