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Background: The great majority of successfully resuscitated out-of-hospital cardiac arrest (OHCA) patients will subsequently die during their ICU and hospital stay. Several studies have previously described the main causes of OHCA but the impact of aetiology on the outcome and the timing and value of diagnostic procedures such as coronary angiogram remains controversial.

Methods: We analysed the causes of cardiac arrest in a prospective database from a tertiary reference. We compared the mortality observed in the subgroups of patients with a cardiac or a non-cardiac cause of arrest.

Results: 983 patients were admitted from January 2000 to August 2008. In patients without an obvious non-cardiac cause of arrest, a coronary angiogram followed if necessary by a coronary angioplasty was performed at admission. The median age was 58 years (range 84.39) and 74% were male. Past or current cigarette smoking was noted in 54%, hypertension in 35% and hypercholesterolemia in 23%. The causes of OHCA were an acute coronary syndrome (ACS=Gr1) in 389 pts (40%), primary ventricular arrhythmia (VT-FV=Gr2) in 154 pts (16%), cardiac failure (=Gr3) in 35 pts (3%), acute respiratory failure (=Gr4) in 186 pts (19%), neurological failure (=Gr5) in 41 pts (4%), unknown (=Gr6) in 71 pts (7%) and others causes (=Gr7) in 104 pts (11%). Overall, the mortality rate of the entire cohort was 68%: mortality rates observed in each subgroup are displayed in the figure.

January 15th, Friday 2010

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Central Venous Oxygen Saturation is a Strong Predictor of Outcome in Patients with Cardiogenic Shock

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Introduction: Central venous oxygen saturation (SvO2) provides an accurate assessment of oxygen delivery and organs consumption balance, and correlate with outcome in extra cardiac shock. Its prognostic value has never been specifically validated in heart failure patients with cardiogenic shock.

Methods: SvO2 was prospectively assessed in 27 patients (60±17 years, 17 male, LVEF=25±6%) admitted for heart failure with cardiogenic shock. SvO2 before and after 24 hours (24H SvO2) of intra-venous inotropic and diuretic support in patients with cardiogenic shock was compared to control subject with compensate heart failure (n=12) and to in hospital outcome (death and heart transplant).

Results: During hospitalisation period, major cardiovascular event occurred in 10 (36%) patients (6 deaths, 4 heart transplants). In patients with cardiogenic shock, admission SvO2 was lower than in patients with compensated heart failure (50±12, 66±6, 95% CI>58%) but increased after 24H of treatment (50±12, 59±8, p=0.002). Importantly, improvement in SvO2 at 24H (>58%, n=15) was associated with an excellent in hospital outcome (93%, 14/15), while a persistently low SvO2 at 24H (<58%) correlated with the occurrence of major cardiac adverse outcome (75%, 9/12).

Furthermore, there was no difference regarding to clinical or echographical features between event free and poor outcome groups.

Conclusion: Change in SvO2 under intra-venous inotropic and diuretic treatment is a strong predictor of outcome in patients with cardiogenic shock.

January 16th, Saturday 2010

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Type B aortic syndrome: comparison of medical and endovascular management

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Background: Type B aortic syndrome is one of the most life-threatening aortic condition. The management of descending aortic diseases remains controversial. The aim of this study was to compare the results of medical and endovascular treatments of type B aortic syndromes.

Method: The medical records of patients with type B aortic syndrome between 2000 and 2009 were retrospectively revised. Type B aortic syndromes consisted of acute aortic dissection (n=71), chronic aortic dissection (n=32), aortic hematoma (n=27) or penetrating ulcers (n=4). Patients with traumatic aortic ruptures were excluded. The population was divided into two groups. Patients of group A were medically treated (n=76) and patients of group B underwent endovascular management (n=58). Short and long term outcomes were compared. The median follow up was 28.5 months.

Results: Mean age was 66.3±11.6 years old. The sex ratio was 2.83 (Male/Female). In group B, past history of type A aortic dissection were more frequent (p<0.05) and mean aortic diameter of the descending thoracic aorta was higher (p<0.001). There were no other statistically significant differences between the two groups. Overall in-hospital mortality was 11.8% in group A and 8.6% in group B (p=0.53). Overall survivals at one year were respectively 84.3% and 88% in group A and B (p=0.54). Overall survivals at five years were respectively 72.4% and 81.1% in group A and B (p=0.2). However a significant difference in mortality appeared at nine years follow up, giving the advantage to the endovascular treatment according to Kaplan-Meier estimates (p<0.05).

Conclusion: In hospital mortality and mild term results were not different between the two groups. Long term results seemed to be better in the endovascular group. These results suggest the potential interest of endovascular management of type B aortic syndrome particularly in term of long term survival. This point has to be confirmed in larger populations and longer follow up.

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Kinetics and prognostic value of D-Dimer in acute aortic dissection

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Introduction: Diagnostic value of circulating D-Dimer (DD) in acute aortic dissection (AAD) has been shown recently. However, there is no data concerning the kinetics of DD in AAD and few is known about prognostic value of DD in AAD.

Objectives: to describe the kinetics of circulating DD during the in-hospital period of AAD in patients and to analyse its prognostic value.

Patients and Methods: consecutive patients presenting with AAD in our institution were included. Follow-up was obtained to determine the total mortality and major events related to AAD i.e. re-intervention, aneurismal evolution, persistence of a circulating false lumen). DD were assessed by immunoturbidimetric method (Stago®, France).

Results: 109 patients (mean age 62 ± 14 years) were included. 76 patients were Stanford A (70%, surgery in 97%), and 33 Stanford B (30%, surgery in 9%). DD levels at admission were 10032 ± 7955 ng/ml. The kinetic of DD followed a “V” curve with a significant decrease until day 2 (nadir) and a slow increase thereafter up to day 8 without difference between the type of dissection or whether the patients were operated or not. Cumulative mortality was 16% in-hospital and 28% at a mean of follow up 3.4 ± 3 years. In-hospital mortality was associated with DD level at admission and at day 2 (nadir). Cumulative long-term mortality was only associated with DD level at day 2 (nadir) at the cut off of 2000ng/ml. DD were not associated with re-intervention, aneurismal evolution or persistence of a circulating false lumen.

Conclusion: DD kinetic in AAD follows a biphasic “V” curve, with a nadir at day 2. In hospital mortality is associated with DD at admission and at day 2, whereas cumulative long-term mortality is only associated with DD levels at day 2. These results suggest that a DD dosage at admission and day 2 in AAD might be of help for the patient prognosis evaluation.

Does grade 3 ischemia on admission electrocardiogram predicts failure of myocardial reperfusion after coronary angioplasty for acute myocardial infarction?

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Failure of myocardial perfusion after coronary angioplasty for acute myocardial infarction (AMI) is associated with a poor prognosis. Grade 3 ischemia (G3I) was shown to be associated with failure of myocardial perfusion.

Aim: Evaluate the prognosis impact of G3I, recorded on the admission electrocardiogram, after percutaneous coronary intervention (PCI) for AMI.

Methods: One hundred eight patients had PCI in the setting of AMI. G3I was defined as: Absence of S wave below the TP-PR isoelectric line in > 2 leads. Patients meeting the ST-elevation criteria but not the G3I criteria were classified as grade 2 ischemia (G2I). Myocardial perfusion was evaluated on ST-segment resolution and angiographyally on the flow of infarct-related artery graded according to the TIMI scale. Occurrence of no-reflow, no ST-segment resolution and hospital mortality were evaluated.

Results: Patients were divided in 2 groups: G3I (51 patients) and G2I (57 patients). Clinical and angiographic characteristics were similar, absence of ST-segment resolution; the no-reflow phenomena and hospital mortality were more common in the G3I group respectively: 47% vs 20% (p = 0.002), 27% vs 10% (p = 0.024) and 21.6% vs 8.8% (p = 0.062). IG3, female gender, diabetes and delay to consultation > 2 hours were associated with the occurrence of no-reflow, persistence of ST-segment elevation and hospital death. In multivariate analysis, IG3 was an independent factor of no-reflow and absence of ST-segment resolution: OR 3.45 (CI 95% [1.15 to10.31]) p=0.027 and OR 3.47 (CI 95% [1.37 to9.01]) p=0.011, respectively. Female gender, no-reflow and persistence of ST-segment elevation were the only independent predictive factors of hospital mortality, respectively : OR 10.59 (CI 95% [1.68 to66.8]) p=0.012 ; OR 7.39 (CI 95% [1.52 to35.8]) p=0.013 ; OR 50 (CI 95% [4.69 to532]) p=0.001 but not the grade 3 ischemia.

Conclusion: Grade 3 ischemia on the admission electrocardiogram of acute myocardial infarction is a strong independent predictors of failure of tissue reperfusion.

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French national survey on the hyperglycemia management in acute coronary syndrome, comparison between coronary care units and out-of-hospital mobile emergency units practices

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Background: The 2006 French recommendations concerning acute myocardial infarction management occurring out of cardiologic unit recommend a close control of glycemia. The aim of our study was to assess spread of these recommendations.

Methods: We conducted in 2008 a national phone survey in coronary care units (CCU) and out-of-hospital mobile emergency units (SMUR). Senior physicians were asked about local hyperglycemia protocol management for patients with acute coronary syndrome (ACS).

Results: The mains answers from the cardiologists and the emergency physicians (EP) are listed in the table.

<table>
<thead>
<tr>
<th></th>
<th>CCU n=125</th>
<th>SMUR n=245</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic glycemia dosage in patients with chest pain</td>
<td>55 %</td>
<td>55 %</td>
</tr>
<tr>
<td>Systematic glycemia dosage in patients with ACS</td>
<td>59 %</td>
<td>63 %</td>
</tr>
<tr>
<td>Specific insulin protocol in patients with ACS</td>
<td>55</td>
<td>14</td>
</tr>
<tr>
<td>Same hyperglycemia treatment for diabetic and non diabetic patient</td>
<td>52 %</td>
<td>62 %</td>
</tr>
<tr>
<td>% of physicians who have already treated hyperglycemia during ACS</td>
<td>98 %</td>
<td>37 %</td>
</tr>
</tbody>
</table>

Only 50 percent of the SMUR have insulin for out of hospital treatment. In the CCU the first result of glycemia is a capillary dosage for 64% and a blood dosage for 36%.