Could intra-aortic balloon pump in addition to extracorporeal membrane oxygenation improve hemodynamics in patients hospitalized for refractory cardiogenic shock?

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Background: Refractory cardiogenic shock may lead to the emergent implantation of an ECMO (Extracorporeal Membrane Oxygenation). Previous recent guidelines recommend the use of IABP (Intra-Aortic Balloon Pump) in this situation. Up to now, it still remains a debate whether the combination of both devices may be useful.

Objectives: The purpose of this study was to determine the impact of an IABP combined to the ECMO on the basis of general hemodynamic parameters and microcirculation.

Methods: This monocentric prospective study included all patients hospitalized for refractory cardiogenic shock treated with ECMO and IABP between November 2010 and October 2011 in our Intensive Care Unit at la Pitié-Salpêtrière hospital, Paris, France. General hemodynamic status was assessed using clinical parameters, echocardiography and pulmonary capillary catheter. Microcirculation was evaluated using orthogonal polarized spectroscopy and tissue oxygen saturation in muscle (InSpectra®) as well as in brain (Equanox®).

Results: We included 12 consecutive patients aged of 57.3±14.4 yo (75% men). IABP was associated with lower systolic pulmonary arterial pressure (23.4±5.4 mmHg vs 28.5±10.5 mmHg, p=0.05), lower mean pulmonary arterial pressure (18.8±7.8 mmHg vs 23.7±10.9 mmHg, p=0.01), lower pulmonary capillary wedge pressure (14.9±7.7 mmHg vs 19.3±15.6 mmHg, p=0.01) and higher left ventricular filling (LV) pressure (42±10 vs 20±0.9, p=0.04). IABP significantly reduced LV dimensions (End-diastolic LV diameter 51.8±13.6 mm vs 54.2±13.4 mm, p=0.001 and End-systolic LV diameter 49.6±13.7 mm vs 50.8±13.1 mm, p=0.05). However, no statistical improvement of the microcirculation was observed on the basis of muscular and brain oxymetry.

Conclusion: In refractory cardiogenic shock requiring ECMO, the association with an IABP could reduce the incidence of acute pulmonary edema by recreating a pulsatile blood flow but does not significantly improve microcirculation.

Pulmonary embolism outcome: a retrospective assessment of four markers of right ventricular dysfunction on computed tomography

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Objectives: Acute pulmonary embolism (PE) outcome is mainly conditioned by the right ventricular dysfunction. We investigated the prognostic role of four markers of right ventricular dysfunction on computed tomography (CT). Increasing of right and left ventricle diameter ratio on axial views (RV-LVax), on four-chamber reconstructed views (RV-LV4c), pulmonary artery (PA) enlargement, and increasing of the PA / aorta diameter ratio (PA-Ao).

Patients, methods: We evaluated 207 patients with acute PE confirmed by chest CT in our unit from January 2007 to December 2009 (mean age 69.8±17 years, 49.3% women). CT measures were done by two observers blinded from clinical and outcome data. The primary endpoint was the one-year mortality. Secondary endpoint was the correlation to the Pulmonary Embolism Severity Index (PESI).

Results, discussion: Increasing of the RV-LVax is a nearly significant predictor of one-year death (p=0.056). It is increased in 90.9% patients with massive PE. It is significantly correlated to the PESI (p=0.001). Values of RV-LVax are correlated to the values of RV-LV4c (r=0.95), but RV-LV4c is not significantly correlated to the one-year mortality (p=0.173). PA diameter is significantly correlated to the axial RV/LV ratio (r=0.36); PA enlargement above 27.5 mm (determined on ROC curve, sensitivity 0.65, specificity 0.67) is a significant predictor of one-year death (p=0.002), such as PA-Ao (p=0.023).

Conclusion: RV-LVax has an interesting prognostic value. Lack of significance could be due to the small number of patients included. RV-LV4c seems not necessary. The correlation between RV-LVax and the PESI suggests that it is a predictor of death. PA diameter and PA-Ao should be used in the risk stratification. Our study confirms the high mortality rate in massive or moderate risk PE versus low risk PE (25.4% versus 9.9%, p=0.001). Our study reafirms the prognostic value of CT, added to its diagnostic value.

An example of extreme cardiology: chest pain on the high seas and helicoptered medical evacuations. The French Navy experience

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Introduction: French Navy provides medical evacuations by helicopter (HME) on the Atlantic coast, up to 320 kilometers offshore, and under all weather conditions. The epidemiology of acute chest pain (ACP) on the high seas is little known. In this study, we aimed to assess the prevalence and constraints found in the management of these emergencies.

Materials and methods: This was a retrospective, descriptive, monocentric study performed from January 1, 2000, to April 30, 2009. The inclusion criteria was the occurrence of ACP while the patient was on the high seas, which required a HME

Discussion: Our study shows a predominance of ACS with ST-segment elevation in the diagnosis of ACP. Even if the working conditions are extreme, the management of ACP on the high seas may be optimal. The limits of HME are not therapeutic, but diagnostic. Indeed, 42% of the initial diagnoses were rectified. A management flowchart has been proposed within the framework of the evaluation of professional practices, with a diagnostic reasoning based around the ECG and the patient’s monitoring (fig1).

Conclusion: The study has highlighted the high prevalence of ACP occurring in an offshore environment. The diagnosis is difficult in a dangerous context, which makes these medicalized evacuations singular.
Purpose of study: estimating the initial management of patients suffering from acute coronary syndrome with ST segment elevation at the CHU Beni-Messous department of cardiology.

Patients and methods: a prospective observational study carried out over the period from the 1st of August 2009 to the 31 of March 2012. The patients included presented a myocardial infarction for less than 24 hours, were looked after by the emergency cardiac care.

Results: 271 patients were included, 227 men, 44 women, average age: 57.45 years. All these patients were received at the emergency cardiac care and they all came by their own means none was brought by any type of medical transport.

76% of the patients presented chest pain.

61% of the patients were smokers, 35% are hypertensive, 16% had dyslipidemia, 27% are obese, 50% had a sedentary lifestyle.

At their arrival 89% of the patients were on Killip1, 6% on Killip2, 1% on Killip3, 4% on Killip4.

80% of the patients taken care of in their acute phase benefited from a strategy of reperfusion: thrombolysis 93% or primary angioplasty 7%.

Amongst the thrombolysed patients 58.41% received alteplase, 33.16% received tenecteplase, and 8.43% received streptokinase.

However the delay in receiving medical attention proves to be very long; the median separating the onset of chest pain and the thrombolysis is 220 min.

The adjuvant treatment administrated during the initial stages was: Aspirin 97%, Clopidogrel 81%, Low molecular weight heparin 81%, Analgesics 70%.

The patients were reviewed at one month or reached by telephone.

The global mortality was 10.7% of which 51.72% were due to a cardiogenic shock.

Conclusion: The population of our study is young with high cardiovascular risk factors. In the case of chest pain the SAMU did not take charge of any patient. Thrombolysis remains to be the most used reperfusion technique. Primary angioplasty is not frequent due to insufficient medical and paramedical personnel. The delay to medical assistance is very long. The mortality remains high.

Our ESTIM register is still recruiting patients.

Gender peculiarities of lipid profile and metabolic oxygen-dependent reactions in patients with acute myocardial infarction accompanied with non-alcoholic steatohepatitis

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It is well known that prognosis of acute myocardial infarction (AMI) in women (taking into consideration the age correction) is more unfavorable than in men. That’s why studying of pathogenetic issues of AMI in women with metabolic disorders is highly important.