

## Topic 06 – Hypertension / Vascular disease

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### Death and cardiovascular events in patients with acute coronary syndrome and abdominal aortic aneurysm

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**Background:** Abdominal aortic aneurysm (AAA) is associated with peripheral and coronary artery disease (CAD), however little is known about the prognosis of patients who experienced an acute coronary syndrome (ACS) and have an AAA. The aim of this study was to assess the prevalence of AAA in patients hospitalized for ACS and to evaluate it was associated with an increased cardio-vascular (CV) risk during follow up.

**Methods:** Between February 1, 2008 and March 30, 2009, patients admitted for ACS with significant ( $\geq 50\%$  stenosis) coronary lesions underwent echography to check for presence of AAA. The AAA was defined as dilation of infrarenal aorta with maximum antero-posterior diameter  $\geq 30$  mm. During a 2 years follow-up we recorded all causes death, CV death and non-fatal CV events. The combination of CV death and CV non-fatal events was defined as the primary endpoint.

**Results:** Among 306 patients, 20 AAAs (6,6%) were diagnosed, of average ( $\pm$ sd) diameter  $33\pm 3.7$  mm, with a maximum diameter of 45 mm, non requiring surgery. Follow-up at 2 years was available for 292 patients (95,7%). During follow-up, 77 patients (25,5%) experienced an event (all causes death or non-fatal CV event): 23 deaths (7,6%), of which 16 were from CV cause, and 55 non-fatal CV event (18,2%). No event was due to AAA. In univariate analysis age, abdominal aortic diameter, diabetes mellitus, previously known CAD and AAA were significantly associated with fatal and non-fatal CV event ( $p < 0,05$ ). In multivariate analysis, age (OR=1.03; 95%CI (1.008,1.058)), diabetes mellitus (OR=1.7; 95%CI (1.05,2.7)) and AAA (OR=3.2; 95%CI (1.24,8.44)) were independently associated with the risk of fatal or non-fatal CV event. Age (OR=1.18 95%CI (1.10,1.26)) and AAA (OR=4.17 95%CI (1.17,14.9)) were the only independent predictors of all causes death.

**Conclusion:** Our results show that in patients with CAD, the presence of small non surgical AAA is associated with worse CV prognosis and higher all causes mortality at 2 years.

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### Efficacy and cost-effectiveness of reinterventions for type 2 endoleak with enlargement of the aneurysmal sac after endovascular abdominal aortic aneurysm

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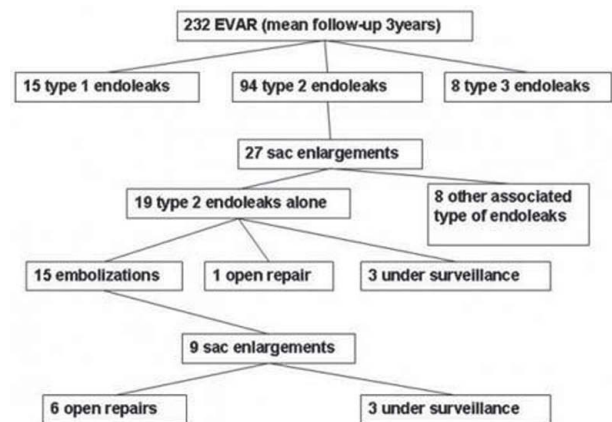
**Background:** Type 2 endoleaks after endovascular aortic repair (EVAR) still represent a problematic issue for vascular surgeon to stop the aneurysmal degeneration of the unsuccessfully excluded aneurysm. This study was designed to assess the efficacy of secondary interventions performed on continuing expanding abdominal aortic aneurysms (AAA) after EVAR with an identified type 2 endoleak.

**Methods:** We retrospectively reviewed patients treated by EVAR for AAA, in which follow-up data of more than 1 year were available. Endoleak incidences, sac diameters, and secondary procedures were collected. Patients

with type 2 endoleaks and continuing expanding AAA were identified. Primary endpoint was the efficacy of these reinterventions on the postoperative AAA diameter course. Secondary endpoints were the aneurysm-related morbidity and mortality, and the cost effectiveness of these complementary procedures.

**Results:** Out of 232 reviewed patients treated by EVAR for AAA, with a mean follow-up of 3 years ( $37\pm 30$  months), 15 type 1 (6.5%), 94 type 2 (40.5%), and 8 type 3 (3.5%) endoleaks were identified. Among the 94 AAA with a type 2 endoleak, 21 presented a sac regression (22.5%), 46 were stable (49.5%), and 27 presented a sac enlargement (28%). Eight of these last subgroup of patients had another type of endoleak associated that required particular treatments. Among the 19 patients presenting a type II endoleak responsible for sac enlargement, 15 were indicated for embolisation procedures, 1 was treated by immediate open repair, and 3 are still under surveillance. Among the 15 patients treated by embolisation, 9 (60%) had still an aortic sac enlargement postoperatively, requiring finally 6 open repairs with one postoperative death. The mean extra cost by patient induced by secondary procedures for type 2 endoleak was  $27110\pm 3098$  Euros.

**Conclusion:** In our experience, endovascular reinterventions for type 2 endoleaks associated with an aortic sac enlargement after EVAR have a poor efficiency on the stabilization of AAA diameter. These procedures entail extra costs and morbidity that should be taken into account in their indication.



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### Interpreting troponin elevation in relation to symptom onset in intermediate-risk pulmonary embolism

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**Background:** Troponin elevation in the setting of acute pulmonary embolism (PE) is of small magnitude and short duration and can go unnoticed in pts referred late after symptom onset.

**Methods:** Prospective, single-center registry of pts with confirmed intermediate-risk PE, defined as at least 1 echocardiographic finding of right ventricular (RV) dysfunction (endo-diastolic (EDRV)/left ventricular (EDLV) end-diastolic diameter ratio  $\geq 1$  in the 4-chamber view, paradoxical septal systolic motion or pulmonary hypertension defined as RV/atrial gradient  $> 30$  mmHg), or positive troponin test. Combined in-hospital endpoint was defined as death, non-fatal recurrent PE, or residual pulmonary vascular obstruction (RPVO)  $\geq 35\%$ .

**Results:** 282 pts were included, age  $66\pm 14$  years, 59% women, 174 (62%) referred  $\leq 5$  days after symptom onset, 108 (38%) after  $> 5$  days. Troponin elevation was observed in 126 (72%) treated within  $\leq 5$  days, in 60 (56%) treated

after >5 days ( $p=0.004$ ). A significant interaction was observed between time since symptom onset and both troponin elevation and persistence of EDRV/EDLV diameter ratio >1 at 48h. The negative predictive value of troponin elevation was 85% in patients treated within 5 days of symptoms, but fell to 70% in those admitted >5 days after symptom onset ( $p=0.002$ ). Positive troponin was an independent predictor of adverse outcome (OR=1.43 [1.08-5.56]). ROC curves show that prognostic value of positive troponin test was higher in pts referred  $\leq 5$  days than in pts referred >5 days after symptom onset ( $p=0.01$ ).

**Conclusion:** There is a significant relation between troponin elevation and time since symptom onset in patients with intermediate-risk PE. Negative predictive value of troponin elevation is adequate in pts treated early ( $\leq 5$  days) but is suboptimal in pts treated >5 days after symptom onset.

Table – Results

	$\leq 5$ days since symptom onset	>5 days since symptom onset	p
Sensitivity	72% (61.3-82.7)	51% (42.4-59.6)	0.005
Specificity	42% (44.5-49.5)	47% (39.1-54.9)	0.33
PPV	26% (18.4-33.6)	30% (22.2-37.8)	0.81
NPV	85% (78.4-91.6)	70% (63-77)	0.002

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### Management of hypertension by telemedicine: feasibility study and results on 100 patients

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**Introduction:** According to the results of the national Health and study conducted in 2006-07, the prevalence of hypertension among 18 to 74 years old population is estimated at 31%. Among them, 20% are not treated. Among the ones who are treated, 49% are not controlled.

**Objectives:** The goal of this observational study is to assess the feasibility to follow up blood pressure by telemedicine for 100 hypertensive patients to know the blood pressure profile and to adapt the treatment in real time to improve control. This work won the award "1 Mission 1 million".

**Protocol of the study:** The follow up by telemedicine of the blood pressure figures is done by self measurement with 6 daily measures for not controlled hypertensive patients. The follow up is organized in 3 phases: inclusion, observation, treatment. Blood pressure is measured by oscillometry, result are transmitted directly and available for consultation on a secure web site.

**Patient profile:** Mean age is 68 years old, 44 men and 56 women, 19% are not treated. 18% are treated for atrial fibrillation. Blood pressure at inclusion is 175/92.

**Observational Phase:** 2 groups: 19 patients with a normal blood pressure (135/75), 81 patients not controlled (163/86) who continue the follow up by telemedicine during the treatment phase.

**Treatment Phase:** The adaptation of the treatment is achieved within 11 days with an average of 178/93 at inclusion, 163/86 during the observational phase and 144/78 after the last therapeutic adaptation. The decrease in blood pressure between the 2 phases is 19 mm HG for the systolic blood pressure and 8 mm for the diastolic one. It is obtained by adding another drug (47%) or changing the therapeutic class (22%) with an increase in dosage. 46% reach the objectives (<140) and 54% stay with 154 systolic on average.

**Conclusion:** Telemedicine is a simple method for follow up of blood pressure allowing a rapid adaptation of treatment to improve blood pressure control. Telemedicine implies an active participation of the patient.

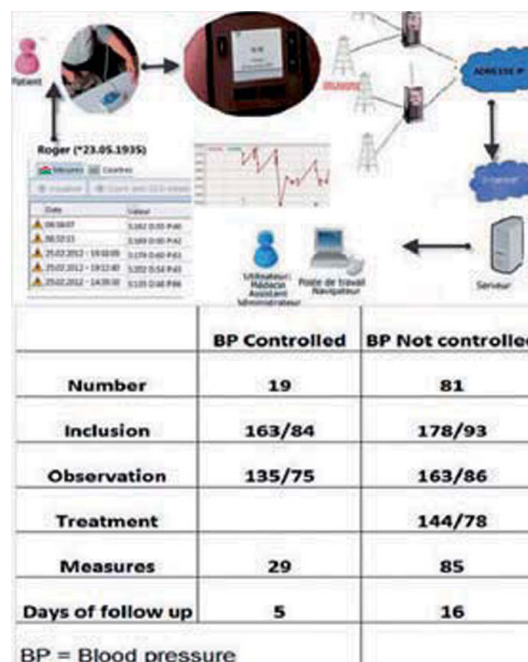


Figure – Method and results

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### Is the clinical measurement of blood pressure sufficient to estimate the control of hypertension in type 2 diabetic patients? Contribution of the ambulatory blood pressure in 100 patients

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Hypertension is frequently associated with type 2 diabetes. It accelerates progression to micro and macro-angiopathy and is often not easy to control.

**Aim:** Evaluate the frequency of controlled hypertension among type 2 diabetes patients with known and treated hypertension, also describe the associated factors with poor blood pressure control.

**Patients and method:** Prospective study concerning 100 patients, who have received a physical examination including a clinical measurement of Blood pressure, a biological assessment and a 24 hours ambulatory blood pressure monitoring (ABPM).

**Results:** The mean age was 60.8±8.1 years, the sex ratio (M / F)=0.59. Hypertension was well controlled in only 37% patients, 21% had masked hypertension and 14% a white coat hypertension. The concordance rate between clinical measurement and ABPM was good: 62%. Subjects with poorly controlled hypertension were significantly older ( $p<0.001$ ), smoking ( $p<0.02$ ), and android morphotype ( $p<0.05$ ). 45% of patients have lost the circadian rhythm, and were significantly more present in the uncontrolled group ( $p=0.000$ ), the morning peak of blood pressure was noted in 55% of patients, and would also be more associated with uncontrolled hypertension ( $p=0.001$ ).

**Conclusion:** Clinical measurement alone is not sufficient to estimate the quality of blood pressure control, a systematic ABPM would be highly desirable in patients at high cardiovascular risk particularly to customize their anti-hypertensive treatment and improve their cardiovascular prognosis.