

Clinical Predictors of Post-EVAR Mortality

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Introduction

Despite the lower invasiveness of EVAR, non negligible short-term mortality is described. It is, mandatory to identify pre-operative predictors of mortality in order to optimize the choice of EVAR candidates at a time when rationing of costs occupies an increasingly prominent place in medical routine.

Aim

To identify all clinical factors preoperatively that may predict a post-EVAR short-term mortality.

Methods

Patients undergoing EVAR from 2005 to 2014 in our institution with at least one pre-operative and one post-operative CT scan were included (n=130). Parameters assessed: age, gender, Diabetes Mellitus, Arterial Hypertension, history of smoking, ejection fraction, statin use, endoleak occurrence, history of coronary heart disease and cardiac surgery, symptoms of peripheral and carotid artery disease prior to surgery and type of anesthesia

Results

Variable	Cumulative Survival	p-value
Age	>75 – 0.638 > 75 – 0.311	0.506
Gender	M – 0.614 F – 0.417	0.312
Diabetes Mellitus	DM – 0.682 No DM – 0.634	0.850
AHT	AHT – 0.661 No AHT – 0.563	0.485
Statin	Statin – 0.566 No Statin – 0.830	0.333
Obesity	Obese – 0.745 No Obese – 0.602	0.139
CRD	CRD – 0.655 No CRD – 0.654	0.823
Smoking	Smoker – 0.579 Non-Smoker – 0.728	0.484
COPD	COPD – 0.380 No COPD – 0.781	<u>0.021</u>
Myocardial Revascularization Surgery	MRS – 0.577 No MRS – 0.668	0.887
Carotid disease	CD - 0.5 No CD – 0.637	0.252
PAD	PAD – 0.357 No PAD – 0.689	0.096
Aneurysm sac enlargement	ANE – 0.135 No ANE – 0.52	<u>0.031</u>
Endoleak	Endoleak – 0.712 No endoleak – 0.217	0.032
Type I endoleak	Endoleak 1 – 0.397 No Endoleak 1 – 0.202	<u>0.002</u>
Ejection Fraction	Preserved – 0.850 Reduced – 0.237	<u>0.006</u>

Table 1. Clinical and Anatomical Determinants of post-EVAR mortality. PAD – Peripheral artery disease; COPD – Chronic Obstructive Pulmonary Disease; CRD – Chronic Renal Disease; MRS – Myocardial Revascularization Surgery; CD – Carotid Disease; AHT – Arterial Hypertension; DM – Diabetes Mellitus; ANE – Aneurysm Sac Enlargement

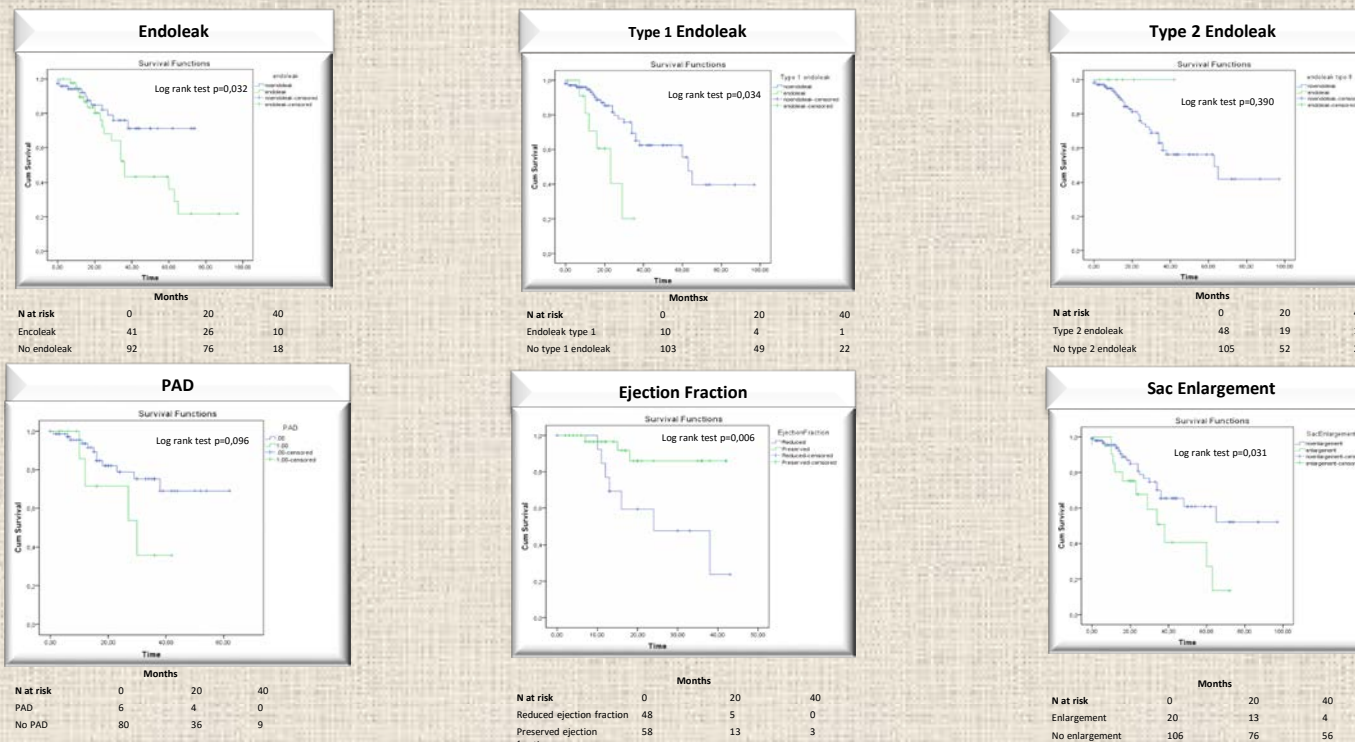


Figure 1. Graphic representation of the influence of Endoleak, PAD and Aneurysm Sac Enlargement on post-EVAR related mortality. PAD - Peripheral Artery Disease

Mean follow-up period (period between EVAR and the last CT) was 27 months. Thirty five patients died during the follow-up.

On univariate analysis the occurrence of any endoleak and type I endoleak individually were associated with increased mortality during the follow up period. Which does not occur with type II endoleak.

History of Carotid or Coronary Artery Disease prior to surgery are not associated with increased post-EVAR mortality. No impact was found regarding statin consumption, contrary to previous studies.

Patients with reduced ejection fraction (HFrEF) have increased mortality when compared with preserved ejection fraction patients.

Multivariate Analysis – Cox Regression Analysis

	B	Sig	Exp(B)
EL	0,216	0,068	1,241
Type 1 EL	0,524	<u>0,045</u>	1,689
PAD	0,025	0,986	0,975
COPD	0,786	0,400	0,988
Reduced Ejection Fraction	2,385	<u>0,017</u>	0,092

Table 2. Multivariate analysis of the influence of EL, type 1 EL, PAD, COPD and Reduced ejection fraction on post-EVAR mortality. PAD – Peripheral artery disease; COPD – Chronic Obstructive Pulmonary Disease; EL – Endoleak

On multivariate analysis, only the occurrence of type 1 endoleak, and the existence HFrEF are independent predictors of increased post-EVAR mortality.

Conclusion

Since Type 1 endoleak and HFrEF constitutes independent predictors of post-EVAR mortality, It is mandatory an intensive surveillance and rapid correction of type I endoleak events as well as a careful and individual selection of subjects with HFrEF.