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7<sup>th</sup> IMAD meeting

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# BACKGROUND

Despite adequate medical management, aortic endograft infection, with incidence of 1-6%, remains a complication with high morbidity and mortality of aortic surgery.





#### Value of different imaging modalities in <u>low grade</u> aortic vascular prosthetic graft infection

	Sensitivity	Specificity
СТ	64%	86%
MRI*	68%	97%
WBCS	73%	87%
FDG-PET	91%	64%
FDG-PET/CT	93%	92.7%



\*Vascular prosthetic graft infection

# **AIM OF THE STUDY**

To explore aortic <sup>18</sup>F-FDG uptake by PET/CT imaging in patients with suspected aortic graft infection after EVAR/TEVAR, to predict and investigate potential associations between outcome and PET/CT imaging.



# MATERIAL & METHODS 366 consecutive patients (2005-2018)

Mean age: 70 years (24 years – 94 years)

**\*** EVAR for AAA (272)

**\*** TEVAR for TAA (94)







Suspected graft infection in 11 patients (3%)



(CT-scan)

FDG PET-CT performed in all suspected patients (N:11)

### 7 Patients (1,9%): PET-CT +

4 EVAR

**3 TEVAR** 



# **MATERIAL & METHODS**

	PET + (n = 7)		PET –	PET – (n = 4)	
	Ν	%	Ν	%	
Sex, male	6	55	4	45	
Mean age	73		78		
Comorbidities					
Chronic kidney failure	1	9	1	9	
Heart disease	2	18	2	18	
Tabacco use	5	45	1	9	
Diabetes mellitus	2	18	0	0	
Hyperlipidaemia	2	18	1	9	
Hypertension	3	30	2	45	
Mean time from vascular treatment to suspected infection (days)	180		16		
Presentation					
Fever ( $T > 37.5 ^{\circ}$ C)	4	45	4	45	
Pain	3	30	0	0	
Elevated Leukocyte count	4	45	4	45	
Elevated C-reactive protein	6	55	4	45	
Positive blood cultures	4	45	4	45	



### **Characteristics of the patients with (+) PET-CT**

Characteristics	N=7	(%)
Gender (male/female)	5	83%
Mean Age	73	
Smoking	5	83%
Hypertension	2	33%
Diabetes mellitus	1	17%
Symptoms		
Fever (T>37,5°C)	4	67%
Pain	2	33%
Increased WBC	3	50%
Increased CRP	5	83%
(+) Blood Culture	3	50%



# **Outcomes of the patients with PETCT**

No	Age	Indication for device	Delay between endograft and proved infection (month)	Length of antibiotics (Weeks)	Surgery	Outcome
1	59	EVAR	Mycotic aneurysm <sup>a</sup>	80	Yes, removal	Full recovery
2	73	EVAR	5	2	Yes, removal	Full recovery
3	73	EVAR	7	6	None	Died
4	77	EVAR/TEVAR	7	12	None	Died
5	72	TEVAR	24	4	None	Alive
6	79	TEVAR	5	28	Oesophageal Prosthesis	Died
7	71	TEVAR	2	6	None	Alive
8 <sup>b</sup>	83	EVAR	3	2	None	Alive
9 <sup>b</sup>	79	TEVAR	52	6	None	Alive
10 <sup>b</sup>	74	EVAR	1	1	None	Alive
11 <sup>b</sup>	79	FEVAR	3	-	None	Alive

Table 2. Management and outcomes of the patients who underwent PET/CT.

<sup>a</sup>Patient initially underwent emergency EVAR for Aorto-duedonal fistula; <sup>b</sup>Patients without endograft infection confirmation.



### Patient N°1: EVAR - treated AAA complicated by aorto-duodenal fistula



EVAR consisted with implementation of a right aorto-uni-iliac graft associated to a right-left femoro-femoral cross bypass.

Conservative treatment composed of strict fasten, aspiration nasogastric tube was chosen for the enteric fistula.

#### Patient N°1: EVAR - treated AAA complicated by aorto-duodenal fistula



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#### Patient N°1: EVAR - treated AAA complicated by aorto-duodenal fistula





Endoprosthesis surgically removed and an axillofemoral bypass was performed

## Patient N°2: EVAR for abdominal aortic aneurysm



Figure 3. Three months after EVAR for AAA, a 73-year-old man presented fever and alteration of clinical status. The PET CT performed immediately show increased FDG uptake. The endograft was removed with full recovery. AAA: abdominal aortic aneurysm.

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### **Patient N°5:** TEVAR (09/2015)



## Patient N°6: TEVAR complicated by aorto-oesophageal fistula



























## Conclusion

✓ Contemporary diagnostic imaging for a potentially lethal endograft infection lacks precision, this observational study illustrates the potential clinical value of FDG PET/CT in the management of aortic endograft infection.

<sup>18</sup>F-FDG PET/CT constitutes an imaging modality able to confirm the diagnosis, monitor disease progression as well as the effect of pharmaceutical treatment and detect relapse

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### [ <sup>18</sup> F] FDG PET/CT can improve the diagnostic accuracy for aortic endograft infection

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