

The logo for LING, featuring the letters 'LING' in a white, sans-serif font. The letters are positioned over a stylized graphic of three curved, overlapping brushstrokes in dark blue, red, and yellow. The background of the slide is light blue with large, faint, light blue brushstrokes.

LING

How we deal with aortic endograft infection

Elena Iborra, Emma Espinar, Ramon Vila

Hospital Universitari de Bellvitge

Barcelona, Spain

Disclosure

Speaker name:

Elena Iborra Ortega

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest

How we deal with aortic endograft infection

Introduction

- ↑endovascular implants = ↑complications
- Endograft infection
 - Incidence 0.2-5% ¹
 - Optimal management:
 - Highly heterogeneous
 - Definitive source control: surgical excision
 - Medical/Surgical
 - Patient/device characteristics

1. MR Smeeds, AA Duncan, MP Harlander-Locke et al. **Treatment and outcomes of aortic endograft infection.** J Vasc Surg, 2016

How we deal with aortic endograft infection

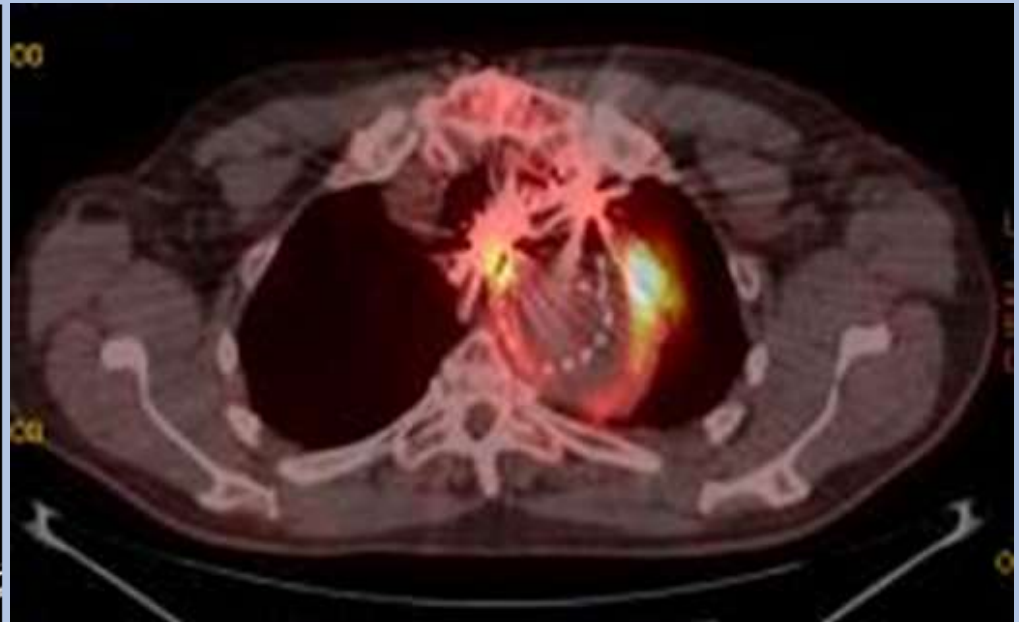
Risk factors for infection

- Deployment in an infected field
 - Aortic fistulae: enteric/bronchial
 - Aortic ulcer
 - Aortic Pseudoaneurysm
 - Mycotic aneurysm
- Postoperative sepsis
- Aortic procedures: i.e. embolization
- Non-aortic related pathologies

How we deal with aortic endograft infection

Purpose

- Define the presentation, management and outcomes of aortic endograft infection at our institution



How we deal with aortic endograft infection

Methods

- Retrospective review 1/1999-12/2017
- Abdominal or thoracic endograft infections
 - Infection during follow-up
 - Aortoenteric/aortobronchial fistulae
 - Mycotic aneurysm

How we deal with aortic endograft infection

Methods

➤ Definition of aortic endograft infection:

- MAGIC criteria ¹

	CLINICAL / SURGICAL	RADIOLOGY	LABORATORY
MAJOR CRITERIA	<ul style="list-style-type: none"> • Pus (confirmed by microscopy) around graft or in aneurysm sac at surgery • Open wound with exposed graft or communicating sinus • Fistula development e.g. aorto-enteric or aorto-bronchial • Graft insertion in an infected site e.g. fistula, mycotic aneurysm or infected pseudoaneurysm 	<ul style="list-style-type: none"> • Peri-graft fluid on CT scan ≥ 3 months after insertion • Peri-graft gas on CT scan ≥ 7 weeks after insertion • Increase in peri-graft gas volume demonstrated on serial imaging 	<ul style="list-style-type: none"> • Organisms recovered from an explanted graft • Organisms recovered from an intra-operative specimen • Organisms recovered from a percutaneous, radiologically-guided aspirate of peri-graft fluid
MINOR CRITERIA	<ul style="list-style-type: none"> • Localized clinical features of AGI e.g. erythema, warmth, swelling, purulent discharge, pain • Fever $\geq 38^{\circ}\text{C}$ with AGI as most likely cause 	<ul style="list-style-type: none"> • Other e.g. suspicious peri-graft gas/fluid/soft tissue inflammation; aneurysm expansion; pseudoaneurysm formation; focal bowel wall thickening; discitis/osteomyelitis; suspicious metabolic activity on FDG PET/CT; radiolabelled leukocyte uptake 	<ul style="list-style-type: none"> • Blood culture(s) positive and no apparent source except AGI • Abnormally elevated inflammatory markers with AGI as most likely cause e.g. ESR, CRP, white cell count

1. OTA Lyons, M Baguneid, TD Barwick et al. **Diagnosis of Aortic Graft Infection: A Case Definition by the Management of Aortic Graft Infection Collaboration (MAGIC)** Eur J Vasc Endovasc Surg, 2016

How we deal with aortic endograft infection

Methods

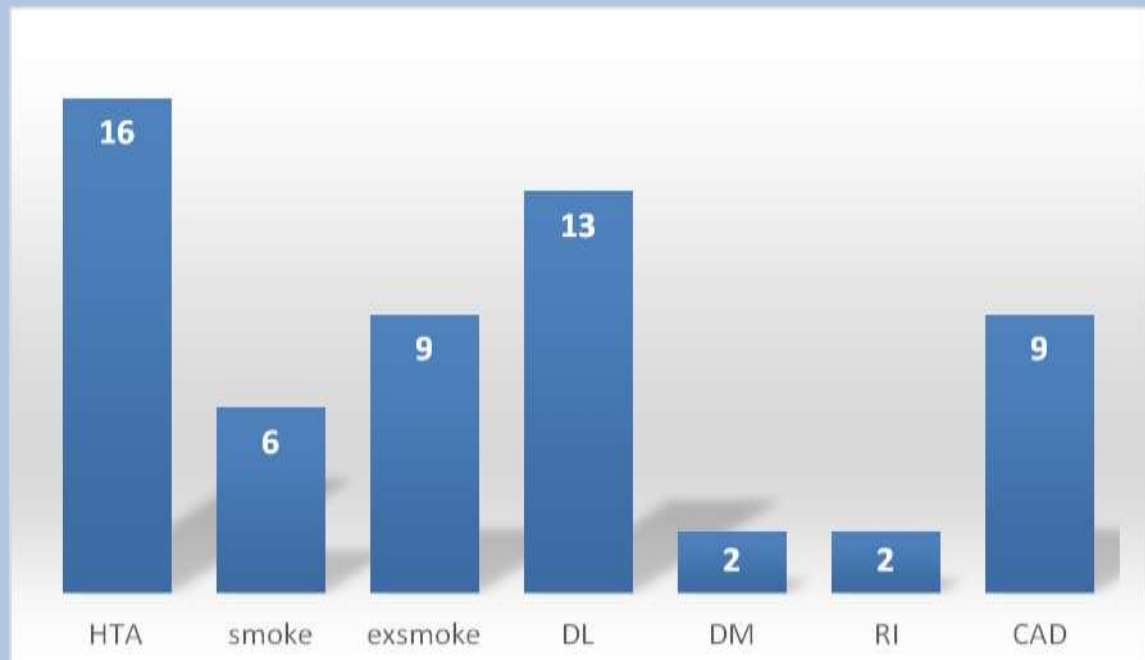
➤ Analysis

- Demographic data and comorbidities
- Indication for index procedure
- Technical factors and possible sources of infection
- Symptoms and Diagnosis
- Treatment
- Mortality

How we deal with aortic endograft infection

Results: demographic data

- 21/660 endovascular aortic procedures: 3,2%
- 20 male (95.2%)
- Age 70.4y (47-84y SD: 10.2)
- Comorbidities



How we deal with aortic endograft infection

Results: Indications index procedure

4 Mycotic

2 abdominal

2 thoracic

5 Ao
fistulae

1 Ao-aesophageal

1 Ao-bronchial

3 Ao-enteric

12 Ao

1 TA Ao dissection

7 AAA

1 juxtarenal AA

2 TA Ao A

1 Thoracic An

How we deal with aortic endograft infection

Results: Indications index procedure

4 Mycotic

2 abdominal/
2 EVAR

2 thoracic/
2 TEVAR

5 Ao fistulae

1 Ao-aesophageal/
1 TEVAR

1 Ao-bronchial/
1 TEVAR

3 Ao-enteric/
3 AUI EVAR

12 Ao

1 TA Ao dissection/
1 TEVAR

7 AAA/
2 AUI, 5 BIF

1 juxtarenal AA/
1 FEVAR

2 TA Ao A/ 2 BEVAR

1 Thoracic An/
1 TEVAR

How we deal with aortic endograft infection

Results: Tq factors & Source of infection

4 Mycotic

5 Ao fistulae

12 Ao

2 Infection at PO index operation

2 Endoleak II embolisation

3 Interval procedures: i.e.colonoscopy

2 interval known infection

How we deal with aortic endograft infection

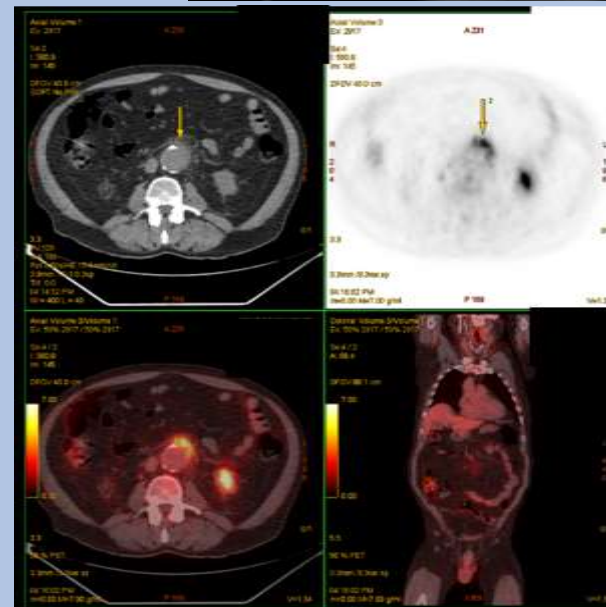
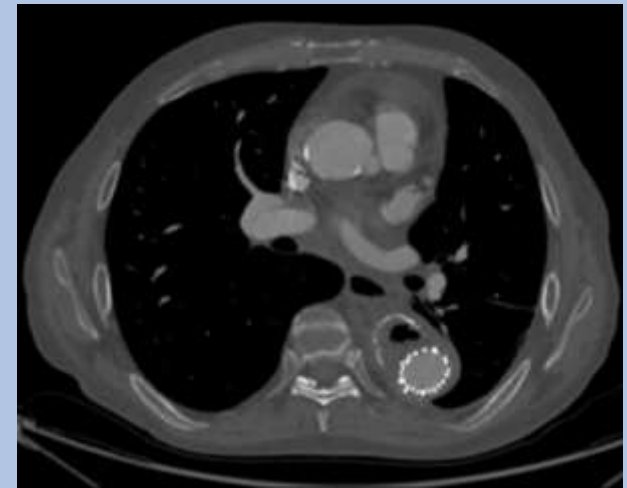
Results: Symptoms & diagnostic

➤ Symptoms:

- Fever 57%
- Pain 38.2%
- Toxic syndrome 28.6%
- Aortic fistulae 23.8%
- Groin abscess 9.5%

➤ Diagnostic:

- micro
- CT scan
- PET scan



How we deal with aortic endograft infection

Results: Symptoms & diagnostic

➤ T to infection: 24.3months (0-128m SD: 39.3)

4 Mycotic

3m

0.2-6m

SD: 2.9

5 Ao
fistulae

0.07m

0-0.17

SD: 0.09

12 Ao

41.5m

0.3-128m

SD: 45.4

How we deal with aortic endograft infection

Results: Treatment

4 Mycotic

2 medical
treatment

1 explant/in situ

1 debridement

5 Ao
fistulae

5 medical
treatment

12 Ao

4 medical
treatment

6 explant/
extranatomic

1 TEVAR

1 debridement

How we deal with aortic endograft infection

Results: Mortality

➤ Follow-up: 22.1months (0.5-71m SD: 22.7)

4 Mycotic

1y: 50%

2y: 50%

5 Ao
fistulae

1y: 60%

2y: 80%

12 Ao

1y: 16.7%

2y: 41.7%

How we deal with aortic endograft infection

Comments

- Indication of index procedure highly determines kind of aortic endograft infection
- Time to presentation depends mainly on etiology of infection
- Kind of treatment depends on
 - Patient characteristics
 - Kind of infection
 - Device characteristics



Bellvitge

Hospital Universitari

The logo for LING, featuring the letters 'LING' in a white, sans-serif font. The letters are positioned over a stylized graphic of three curved, overlapping brushstrokes in dark blue, red, and yellow. The background of the slide is light blue with large, faint, light blue brushstrokes.

LING

How we deal with aortic endograft infection

Elena Iborra, Emma Espinar, Ramon Vila
Hospital Universitari de Bellvitge
Barcelona, Spain