

# Endocarditis infecciosa fúngica

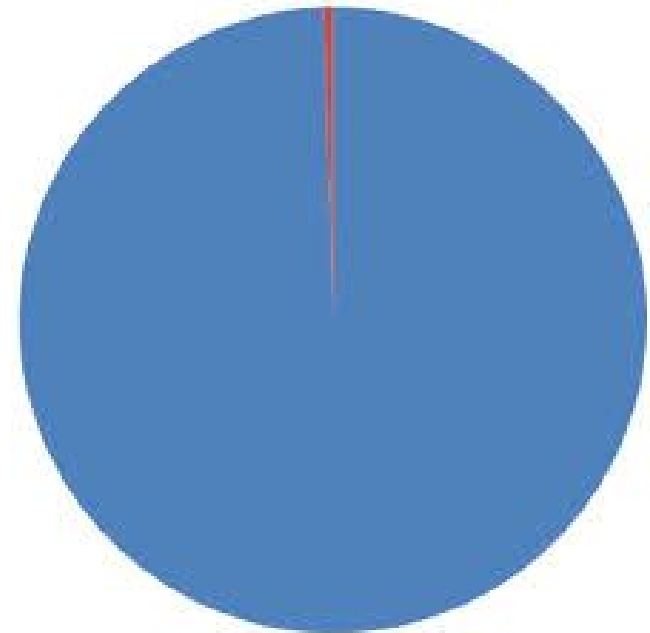
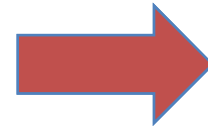
Epidemiología y características clínica

III CONGRESO SEICAV



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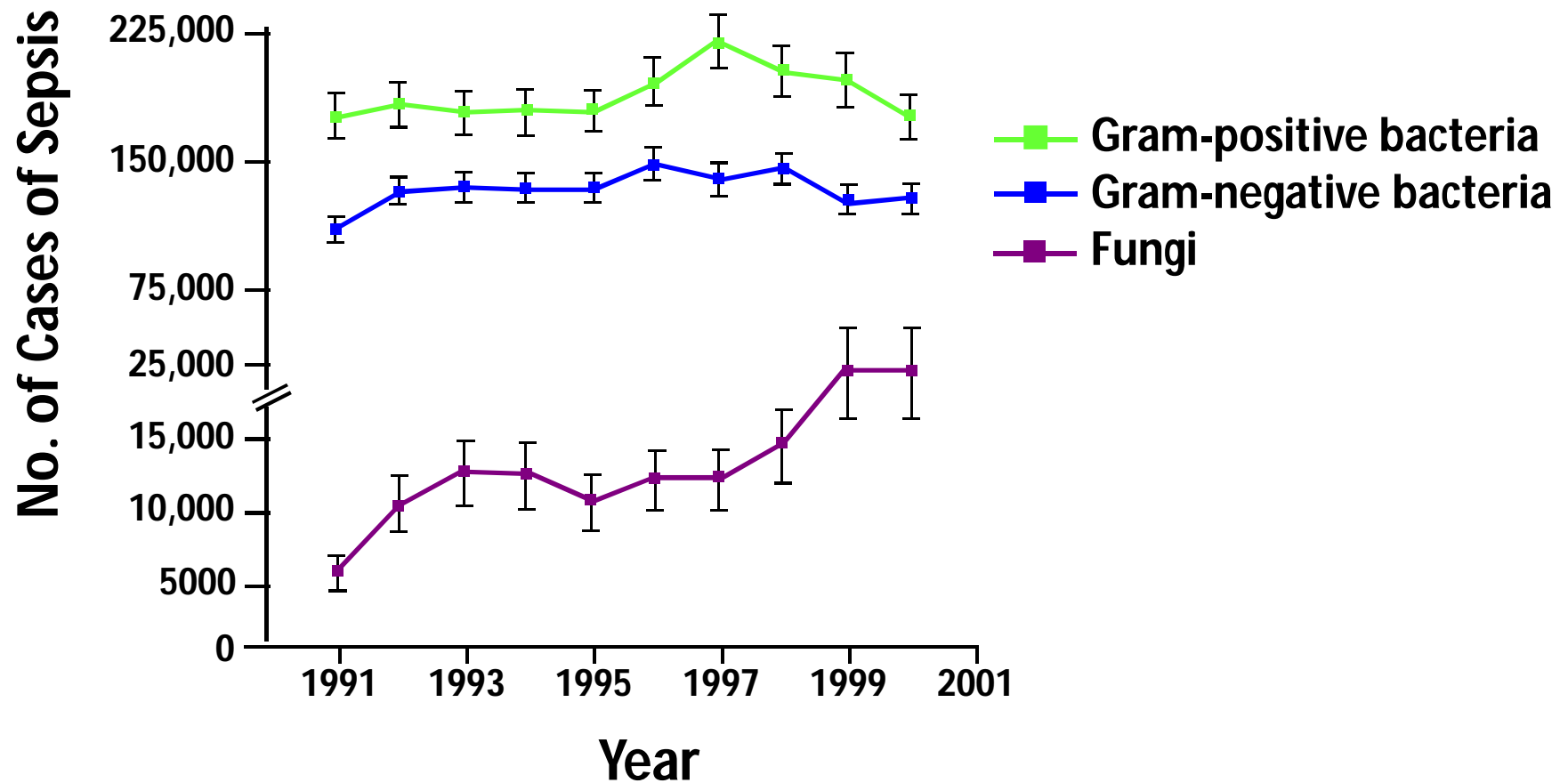
Endocarditis: incidencia  
estimada de entre 3,1-3,7  
episodios por 100.000  
habitantes y año



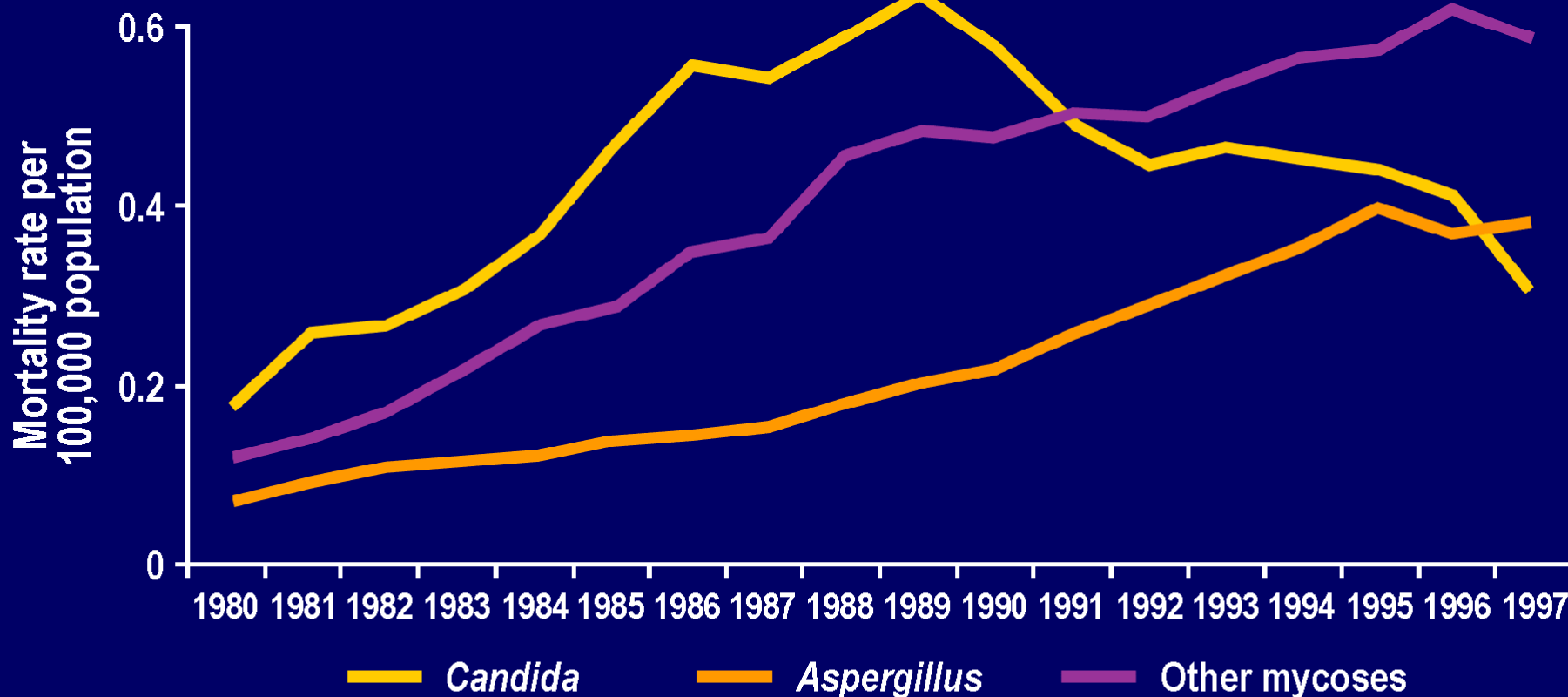
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Infecciones  
fúngicas

# Incidence of Systemic Infections: Bacterial vs Fungal



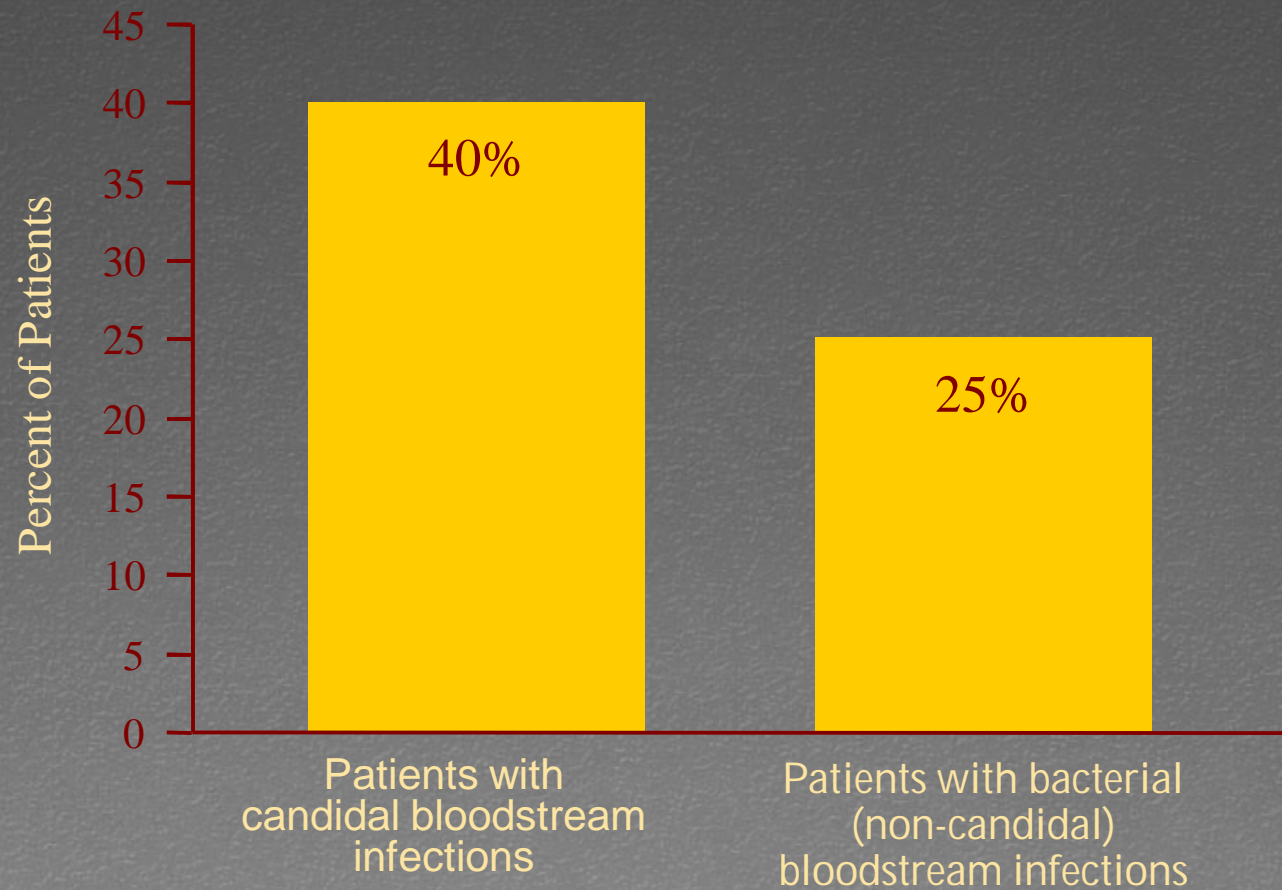
# Mortality Due to Invasive Mycoses



Adapted from McNeil MM et al. *Clin Infect Dis.* 2001;33:641-647.

# *Invasive Candidiasis*

## Mortality Associated with Candidemia



Adapted from Edmond MB et al *Clin Infect Dis* 1999;29:239–244.

# De qué vamos a hablar

- Incidencia/Etiología
- Factores de riesgo
- Clínica
- Complicaciones
- Endocarditis protésica

# Incidencia/Etiología

En una revisión de 270 casos de endocarditis fúngica en la literatura mundial (1965-1995)

Pathogen(s)	1965–1971	1972–1979	1980–1987	1988–1995	Total
Histoplasma	6 (9)	4 (5)	4 (6)	1 (2)	15 (6)
Other <sup>c</sup>	5 (8)	12 (15)	17 (25)	13 (22)	47 (17)
Total	64 (100)	80 (100)	68 (100)	58 (100)	270 (100)
Ratio of:					
Non- <i>albicans</i> species of <i>Candida</i> to <i>C. albicans</i>	0.75	1.4	1.4	1.1	1.2
<i>Aspergillus</i> to <i>Candida</i>	0.5	0.5	0.4	0.5	0.5

**NOTE.** Data are no. (%) of pathogens isolated except as otherwise indicated.

<sup>a</sup> Number of patients from which each pathogen was isolated was as follows: *A. fumigatus*, 25; *A. flavus*, 8; *A. niger*, 3; *A. clavatus*, 1; *A. terreus*, 5; *A. ustus*, 2; *A. nidus*, 1; *Aspergillus* unspecified, 11.

<sup>b</sup> Number of patients from which each pathogen was isolated was as follows: *C. glabrata/torulopsis*, 10; *C. tropicalis*, 10; *C. pseudotropicalis/kyfer*, 1; *C. parapsilosis*, 33; *C. krusei*, 4; *C. stellatoidea*, 2; *C. guillemondii*, 4; *C. parakrusei*, 2; non-*albicans* species of *Candida* unspecified, 12.

<sup>c</sup> Number of patients from which each pathogen was isolated was as follows: *Mucor* species, 3; *Trichosporon beigelii*, 1; *Trichosporon* species, 1; *Cryptococcus neoformans*, 3; *Pseudallescheria boydii*, 4; *Phialophora jeanselmei*, 3; *Curvularia lunata*, 1; *Trichophyton* species, 2; *Microsporium* species, 1; *Penicillium marneffeii*, 3; *Fusarium* species, 1; *Paecilomyces* species, 6; *Penicillium chrysogenum*, 1; *Rhodotorula* species, 1; *Conidiobolus* species, 1; *Scedosporium* species, 1; *Engyodontium alba*, 1; *Wangiella dermatitidis*, 1; *Exophiala dermatitidis*, 1; *Saccharomyces* species, 1; unspecified fungus, 6.]

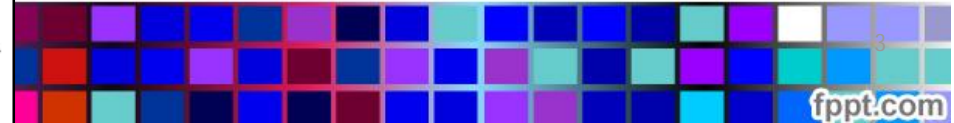
Variables	Fungus	Data
	<i>Candida glabrata</i>	2
	<i>Candida krusei</i>	3
	<i>Candida lusitaniae</i>	1
	<i>Candida chaetamion</i>	1
	<i>Candida zeylanoides</i>	1
	Not specified	18
	<i>Trichosporon inkin</i>	1
	<i>Histoplasma capsulatum</i>	2
	<i>Saccharomyces cerevisiae</i>	1
	<i>Cryptococcus neoformans</i>	1
	<i>Hansenula anomala</i>	1
	<i>Aspergillus nidulans</i>	1
	<i>Aspergillus flavus</i>	2
	<i>Aspergillus terreus</i>	5
	<i>Aspergillus niger</i>	2
	Not specified	3
	<i>Scedosporium</i>	1
	<i>apiospermum</i>	
	<i>Scedosporium prolificans</i>	1
	<i>Phaeoacremonium</i>	1
	<i>parasiticum</i>	
	<i>Acremonium</i> species	1
	<i>Fusarium dimerum</i>	1
	<i>Phialemonium curvatum</i>	1
	<i>Microascus cinereus</i>	1
	<i>Bipolaris spicifera</i>	1
	<i>Scopulariopsis brevicaulis</i>	3
Yeast plus mold	<i>F solani</i> and <i>C parapsilosis</i>	1
Not mentioned		10
Negative culture		1

**Fungal endocarditis, 1995-2000.**  
Pierrotti LC; Baddour LM  
Chest. 122(1):302-10, 2002 Jul.

### Microorganisms Isolated From 152 FE Patients



\*Data are presented as No. (%) or No. unless otherwise indicated.  
†In association with *C albicans* (one case each).





# Incidencia/Etiología

**Table 4. Microbiologic Etiology by Region in 2781 Patients With Definite Endocarditis**

Cause of Endocarditis	No. (%) of Patients <sup>a</sup>						P Value for the Difference Between Regions
	Total Cohort (N=2781)	Patients Admitted Directly to Study Sites Only <sup>b</sup> (n=1558)	Region				
			North America (n=597)	South America (n=254)	Europe (n=1213)	Other (n=717)	
<i>Staphylococcus aureus</i>	869 (31)	487 (31)	256 (43)	43 (17)	339 (28)	231 (32)	<.001
Coagulase-negative staphylococcus	304 (11)	161 (10)	69 (12)	18 (7)	156 (13)	61 (9)	.005
Viridans group streptococci	483 (17)	288 (19)	54 (9)	66 (26)	198 (16)	165 (23)	<.001
<i>Streptococcus bovis</i>	165 (6)	101 (7)	9 (2)	17 (7)	116 (10)	23 (3)	<.001
Other streptococci	162 (6)	101 (7)	38 (6)	16 (6)	66 (5)	42 (6)	.86
<i>Enterococcus</i> species	283 (10)	158 (10)	78 (13)	21 (8)	111 (9)	73 (10)	.05
HACEK	44 (2)	26 (2)	2 (0.3)	6 (2)	19 (2)	17 (2)	.02
Polymicrobial	28 (1)	23 (2)	8 (1)	1 (0.4)	13 (1)	6 (0.8)	.60
Negative culture findings	277 (10)	122 (8)	41 (7)	51 (20)	123 (10)	62 (9)	<.001
Other	121 (4)	66 (4)	22 (4)	12 (5)	59 (5)	28 (4)	.61

Murdoch DR, Corey GR, Hoen B, Miró JM, Fowler Jr VG, Bayer AS, et al. Clinical presentation, etiology, and outcome of infective endocarditis in the 21st century: the International Collaboration on Endocarditis Prospective Cohort Study. *Arch Intern Med* 2009;169:463–73.



# Incidencia/Etiología

**Table 5. Microbiologic Etiology by IE Type in 2781 Patients With Definite Endocarditis**

Cause of Endocarditis	No. (%) of Patients <sup>a</sup>			
	Native Valve IE		Intracardiac Device IE	
	Drug Abusers (n=237)	Not Drug Abusers (n=1644)	PVIE (n=563)	Other Devices (n=172) <sup>b</sup>
<i>Staphylococcus aureus</i>	160 (68)	457 (28)	129 (23)	60 (35)
Coagulase-negative staphylococcus	7 (3)	148 (9)	95 (17)	45 (26)
Viridans group streptococci	24 (10)	345 (21)	70 (12)	14 (8)
<i>Streptococcus bovis</i>	3 (1)	119 (7)	29 (5)	5 (3)
Other streptococci	5 (2)	118 (7)	26 (5)	7 (4)
<i>Enterococcus</i> species	11 (5)	179 (11)	70 (12)	10 (6)
HACEK	0 (0)	30 (2)	13 (2)	1 (0.5)
Polymicrobial	6 (3)	16 (1)	5 (0.8)	0 (0)
Negative culture findings	12 (5)	154 (9)	65 (12)	18 (11)
Other	6 (3)	62 (4)	38 (7)	10 (6)
Surgical therapy	89/234 (38) <sup>c</sup>	784/1639 (48)	274/561 (49)	104/172 (61)
In-hospital mortality	23/236 (10) <sup>c</sup>	281/1643 (17)	131/561 (23)	17/172 (10)

Murdoch DR, Corey GR, Hoen B, Miró JM, Fowler Jr VG, Bayer AS, et al. Clinical presentation, etiology, and outcome of infective endocarditis in the 21st century: the International Collaboration on Endocarditis Prospective Cohort Study. *Arch Intern Med* 2009;169:463–73.

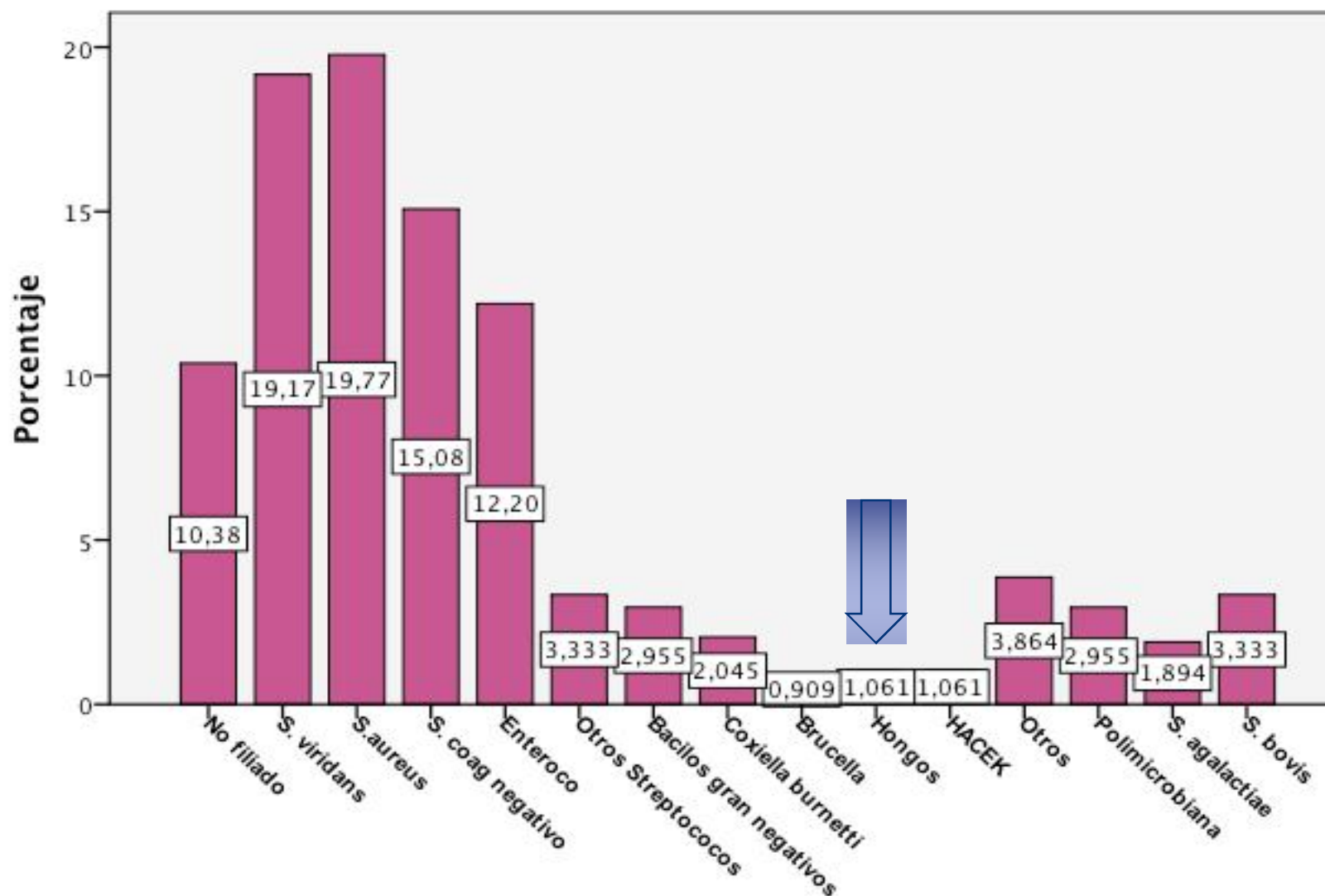


# Incidencia/Etiología

## Base andaluza de endocarditis 1984-2013



1320 casos: 14 por hongos (1%)



# Incidencia/Etiología

## Base andaluza de endocarditis 1984-2013



1320 casos: 14 por hongos (1%)

	Frecuencia	Porcentaje
Válidos		
Aspergillus fumigatus	4	28,6
Candida albicans	6	42,9
Candida guilliermondi	1	7,1
Candida parapsilosis	2	14,3
Mucor	1	7,1
Total	14	100,0



## Estudio Prospectivo de Endocarditis infecciosa en España (GAMES)

2008 a Ene-2014: De los 2653 casos, 58 (2.1%)

Mediana edad: 68 (56-76)  
Varones 38 (65%)

### Tipo

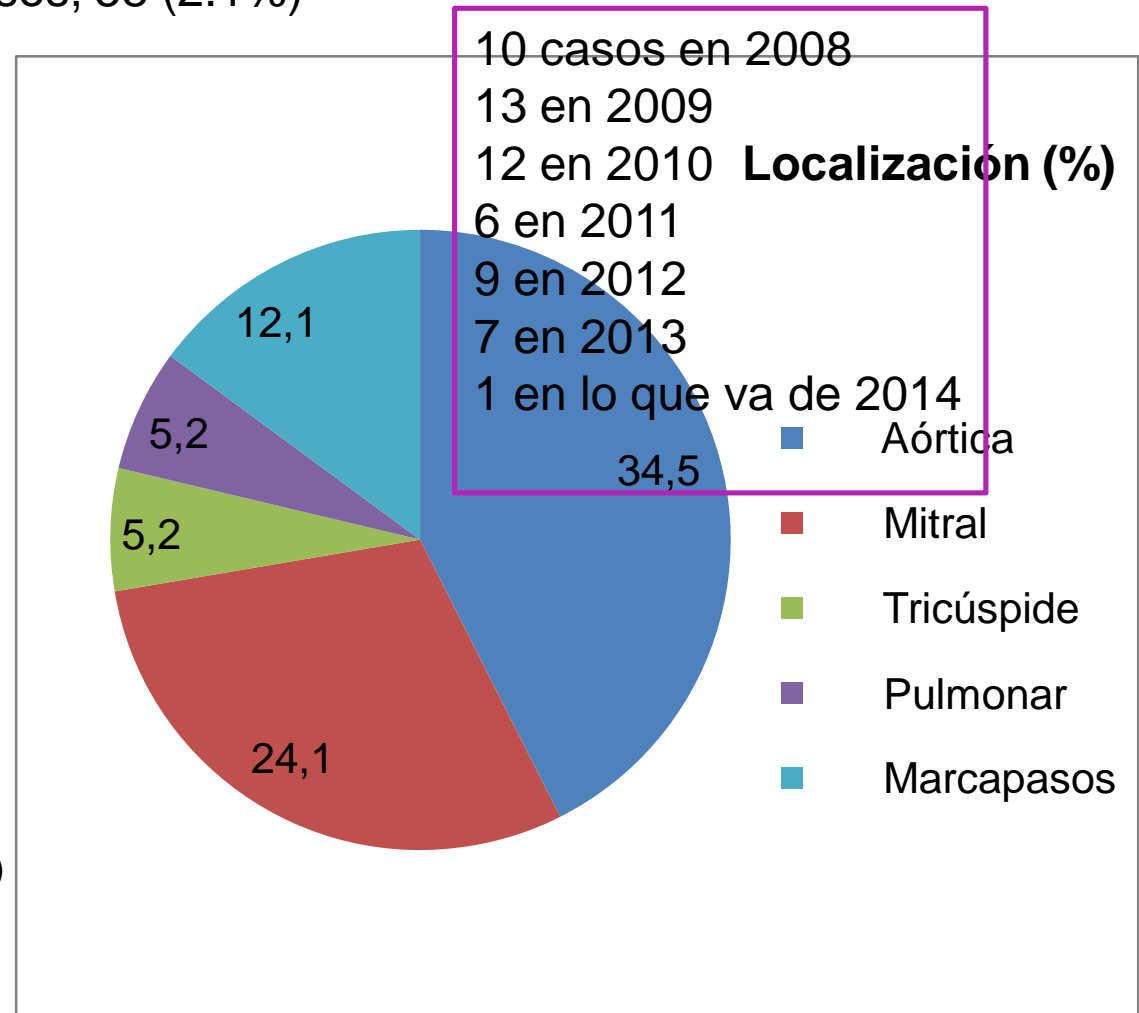
Naturales	28 (48,3)
Protésicas	22 (27,9)

### Lugar Adquisición

Comunidad	13 (22,4)
Nosocomial/RAS	42 (72,0)

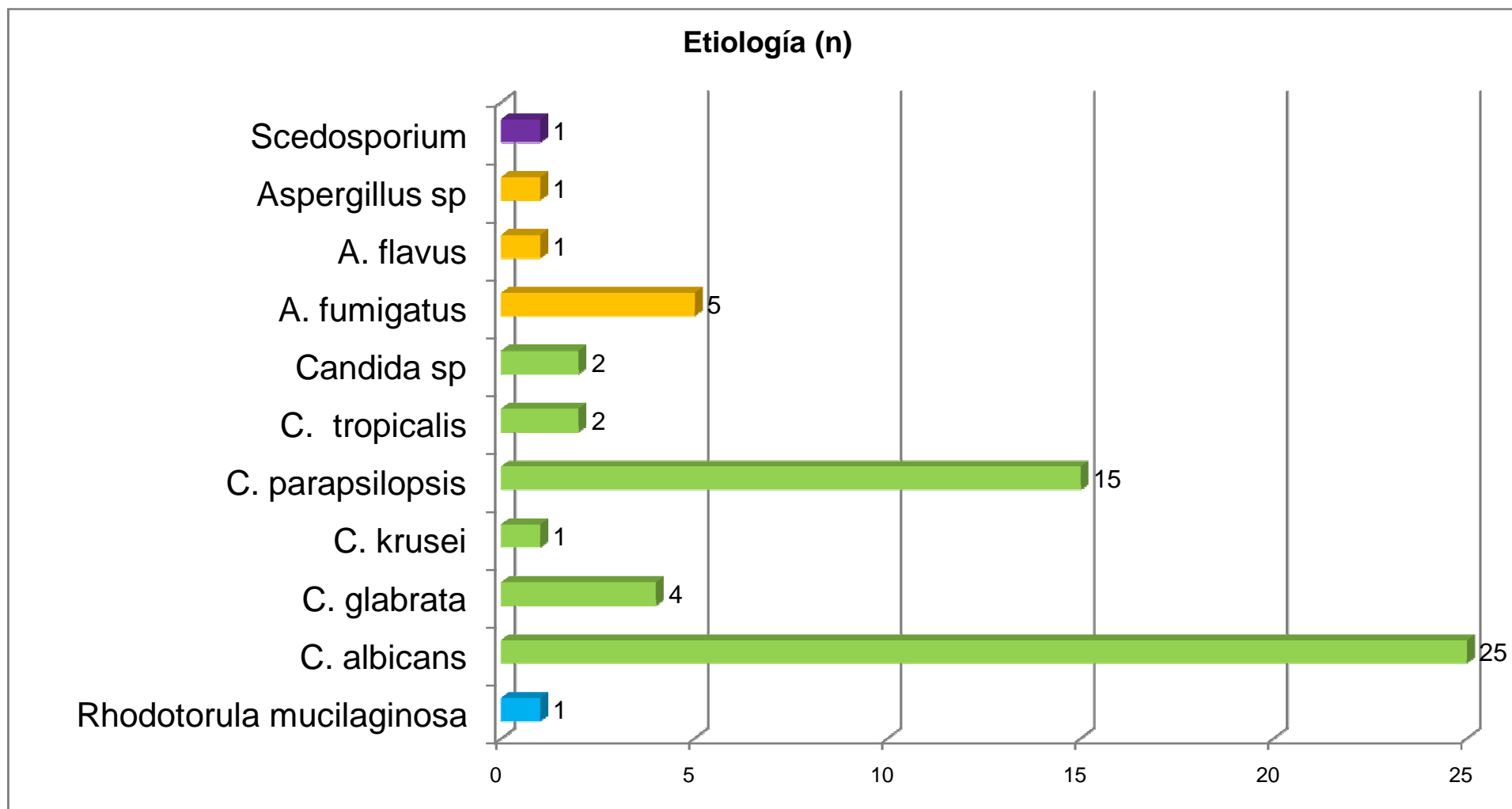
### Fin del episodio

Mediana días ingreso 48 (30,5 - 67,2)  
Exitus: 25 (43,1)



## Estudio Prospectivo de Endocarditis infecciosa en España (GAMES)

2009-2014: De los 2653 casos, 58 (2.1%)



# Incidencia/Etiología

# Gérmenes infrecuentes

## Medical Mycology

Clin. Cardiol. 17, 215–219 (1994)

CURRI

> Pp. 430-434.

Right-Sided  
*Acremonium*

### Short Communications

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0.1099/jmm.0.047548-0

Biomédica 2009;29:177-80

PRESENTACIÓN

### A Case of *Trichosporon beigelii* Endocarditis 8 Years after Aortic Valve Replacement

MICHAEL G. SIDAROUS, M.D., MICHAEL V. O'REILLY, M.D., F.R.C.P.I.,\* CHARLES E. CHERUBIN, M.D.†, ‡

Sections of General Medicine, \*Cardiology, and †Infections Diseases, Veterans Affairs Medical Center, Wilkes-Barre, Pennsylvania, USA

### Endocarditis infecciosa por *Paecilomyces variotii*

Juan Manuel Senior, Clara Saldarriaga

### *Lodderomyces elongisporus* endocarditis in an intravenous drug user: a new entity in fungal endocarditis

K. L. Davesont and M. L. Woods



# Factores predisponentes

Adicción a drogas por vía intravenosa

Cuerpos extraños (*catéteres, prótesis, válvulas, marcapasos o articulaciones protésicas*)

Inmunosupresión (*órgano sólido / trasplante de células madre, la quimioterapia y el VIH*)

Uso prolongado de antibióticos de amplio espectro

Diferentes enfermedades crónicas subyacentes (*diabetes mellitus y la desnutrición*)



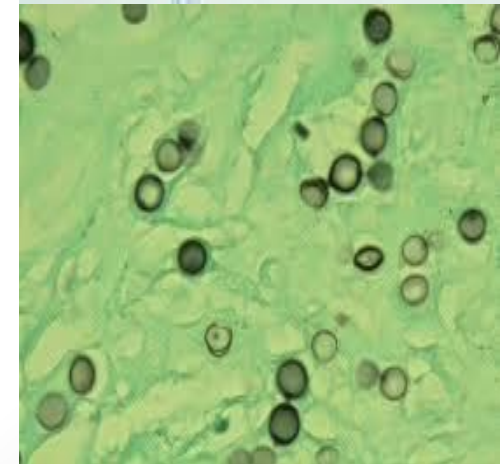
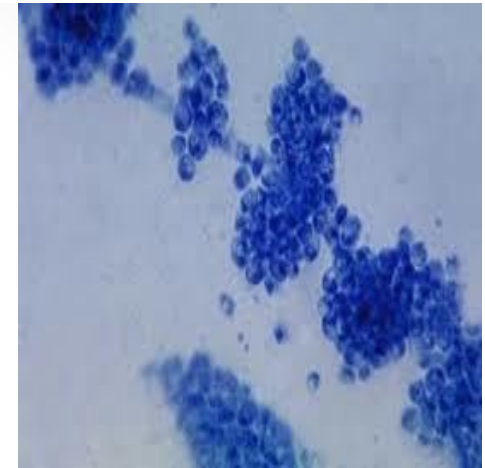


# Factores predisponentes. Particularidades

**Cándida:** la endocarditis asociada a la cuidados sanitarios (catéteres centrales, antibioterapia,...) además de en prótesis cardíacas, ADVP y prematuros con bajo peso

Endocarditis por **Aspergillus** en su mayoría se produce después de la cirugía cardíaca

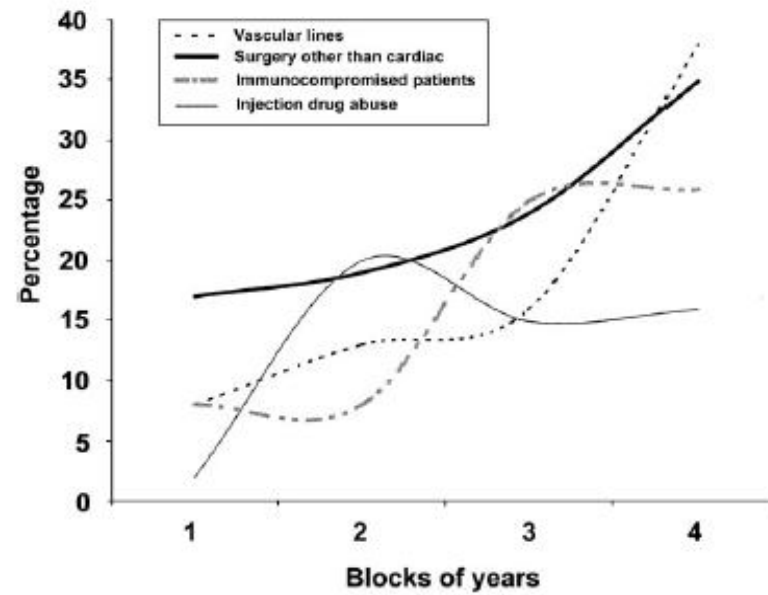
**Infecciones fúngicas diseminadas** como Histoplasma, Cryptococcus, Coccidioides o Blastomyces rara vez causan endocarditis en ausencia de cuerpo extraño (prótesis valvular, marcapasos,...)



# Factores predisponentes

**Table 1. Attributable risk factors for patients with fungal endocarditis.**

Stem risk factor	Code	No. (%) of patients with	
		Stem risk factor	Other risk factors associated with stem risk factor
Other valve disease	16	35 (13)	66
Previous bacterial endocarditis <sup>a,g</sup>	17	34 (13)	92
Injection drug abuse	1	36 (13)	39
Other risk factors			
HIV infection	2	3 (1)	4
Diabetes mellitus	3	12 (4)	29
Malignancy	4	13 (5)	41
Neutropenia	5	5 (2)	20
Parenteral nutrition	7	21 (8)	73
Transplantation	10	5 (2)	22
Urethral or peritoneal catheter	12	2 (1)	6
Prolapsed mitral valve	15	3 (1)	7
Previous dental surgery	19	5 (2)	13
None	—	6 (2)	—



**Figure 1.** Percentage of indicated risk factors by 4 blocks of years (1, 1965–1971; 2, 1972–1979; 3, 1980–1995; and 4, 1988–1995). Curves are smoothed.

## Predisposing Conditions in FE

Predisposing Factors	Yeast (n = 101)	Mold (n = 39)	Microorganism Not Mentioned (n = 10)	Yeast Plus Mold (n = 1)	Total (n = 152)†
[Redacted]					
Pacemaker	5	2	0	0	7 (0.7)
IV drug user	6	0	0	0	6 (0.1)
Diabetes mellitus	4	1	0	0	5 (0.4)
Previous IE	2	1	1	0	4 (2.7)
HIV positive	4	0	0	0	4 (2.7)
Corticosteroid use	0	1	2	0	3 (2.0)
Alcohol abuse	2	1	0	0	3 (2.0)
Bone marrow transplant	0	3	0	0	3 (2.0)
Hemodialysis	0	0	1	0	1 (0.7)
Necrotizing fasciitis	0	0	1	0	1 (0.7)
Brain injury	0	1	0	0	1 (0.7)
Not mentioned	4	0	0	0	4

\*Data are presented as No. (%) or No. Note that four cases did not address the predisposing factors; therefore, 148 cases were used for calculation of percentages, rather than the total of 152 cases.

†One culture-negative case with broad-spectrum antibiotics, parenteral nutrition, and underlying cardiac abnormality as predisposing conditions was included.

# Base andaluza de endocarditis 1984-2013

## Epidemiología/Factores predisponentes



1320 casos: 14 por hongos (1%)

7 nativas y 7 protésicas (6 precoces)

11 Aórticas y 6 mitral

Comorbilidades. Charlson 1.6

Manipulación previa o foco previo: 10 (71%) → Vascular  
8 (57%)

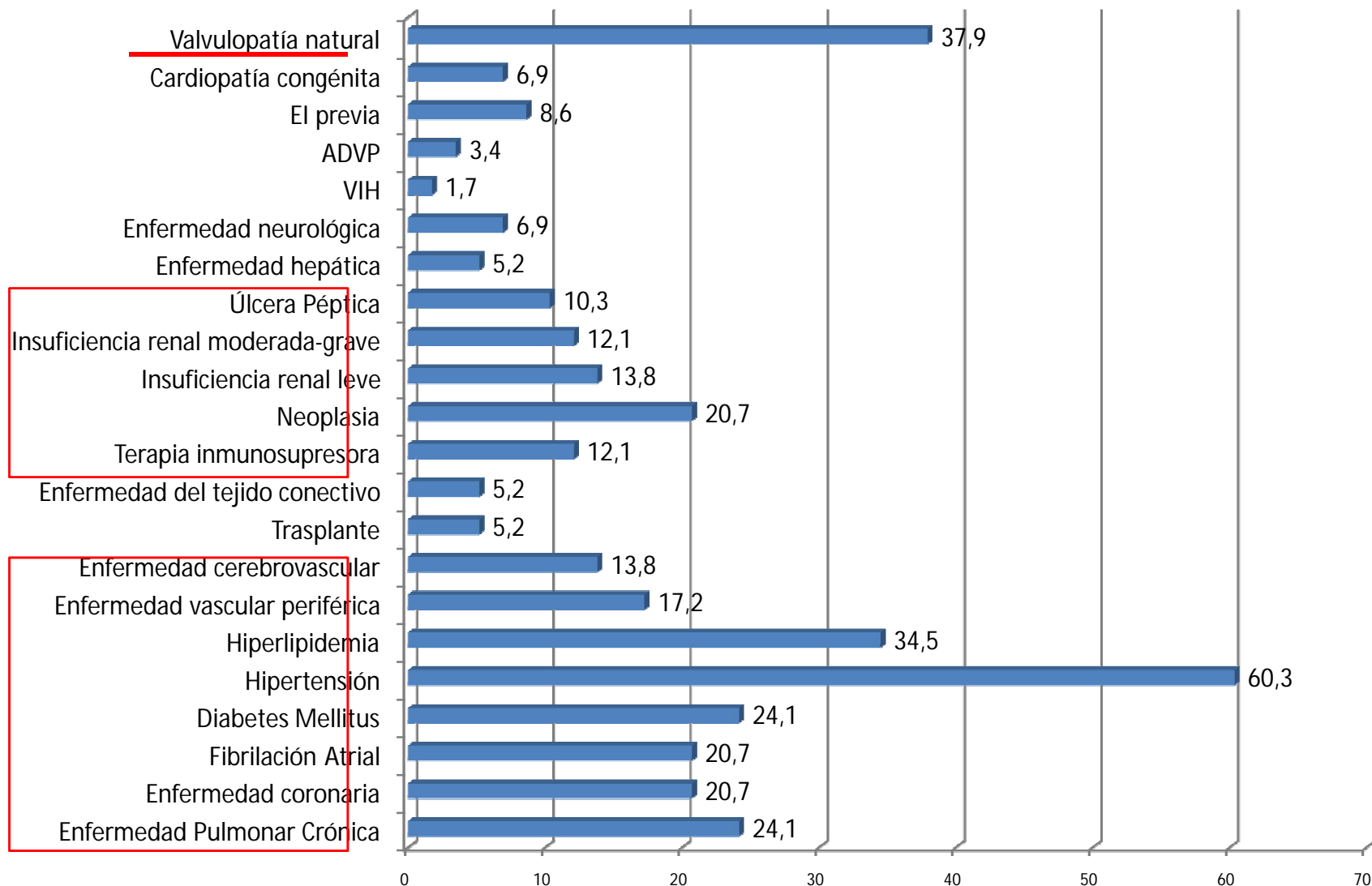


# Factores predisponentes

## Estudio Prospectivo de Endocarditis infecciosa en España (GAMES)

2009-2014: 2653 casos, 58 (2.1%)

Episodio actual de EI (%)

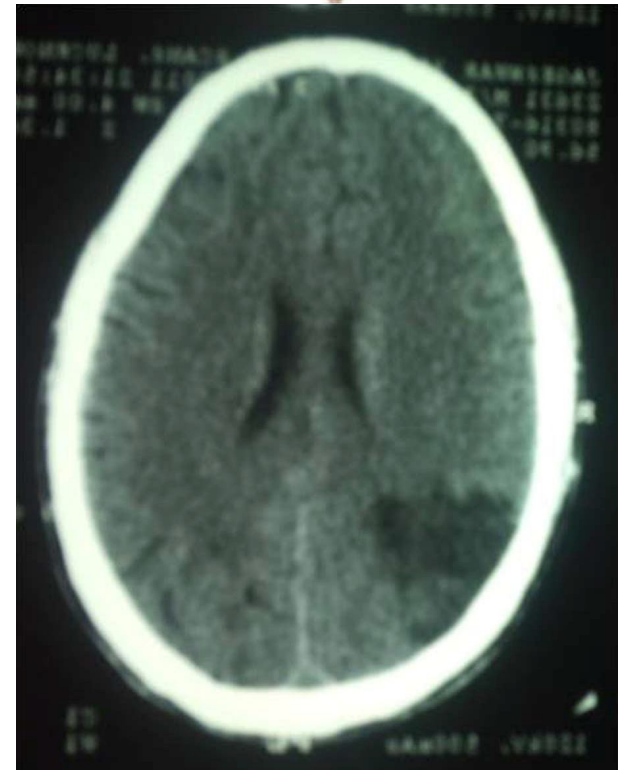


# Clínica

La presentación clínica de los pacientes con endocarditis por hongos es **muy variable**: los síntomas no específicos varían de fiebre y disnea a dolor torácico y la astenia.



**Complicaciones embólicas severas** pueden ser el primer y único síntoma. Embolias vasculares fatales van desde manifestaciones oftálmicas, infartos en diferentes órganos y oclusiones de arterias extremidades a la embolia cerebral y hemorragia.

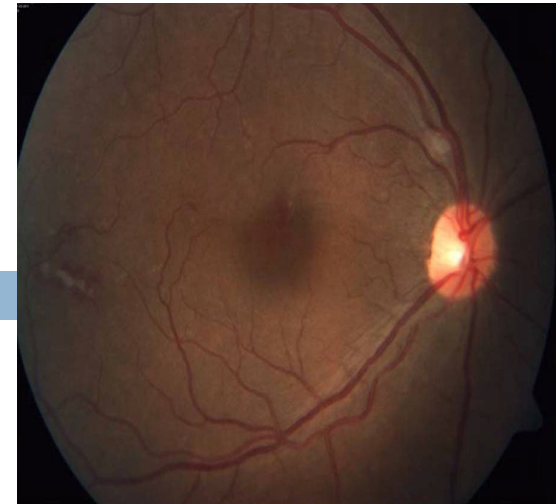


# Clínica

**Coriorretinitis y endoftalmitis** pueden aparecer. Es esencial fondo de ojo

Buscar **lesiones cutáneas**: rash maculopapular, petequias, nódulos y pústulas

Como consecuencia de ello, un "**alto índice de sospecha**" y el conocimiento del grupo de pacientes que son propensos a ser infectados





# Clínica

## Distribution of sites of arterial embolization in 122 of 270 patients with fungal endocarditis

Site	No. (%) of patients
Popliteal	12 (4)
Posterior tibial/dorsalis pedis	7 (3)
Common iliac	8 (3)
Pulmonary	9 (3)
Radial/brachial	8 (3)
Mesenteric/splenic/renal	11 (4)
Coronary	4 (2)
Imprecisely stated	6 (2)

## Complications of fungal endocarditis

Complications	Yeast (n = 61)	Mold (n = 29)	NM (n = 8)	Yeast Plus Mold (n = 1)	Total (n = 100)†
			1	0	61
			2	0	16
			1	1	16
Valvular regurgitation	7	2	0	0	9
Organ failure	4	4	1	0	9
Miscellaneous‡	4	3	5	0	12
Dehiscence	3	2	0	0	5
Valvular stenosis	1	0	0	0	1

\*Mentioned in 100 cases. Data are presented as No. (%) or No. NM = not mentioned.

†Includes one culture-negative case with emboli.

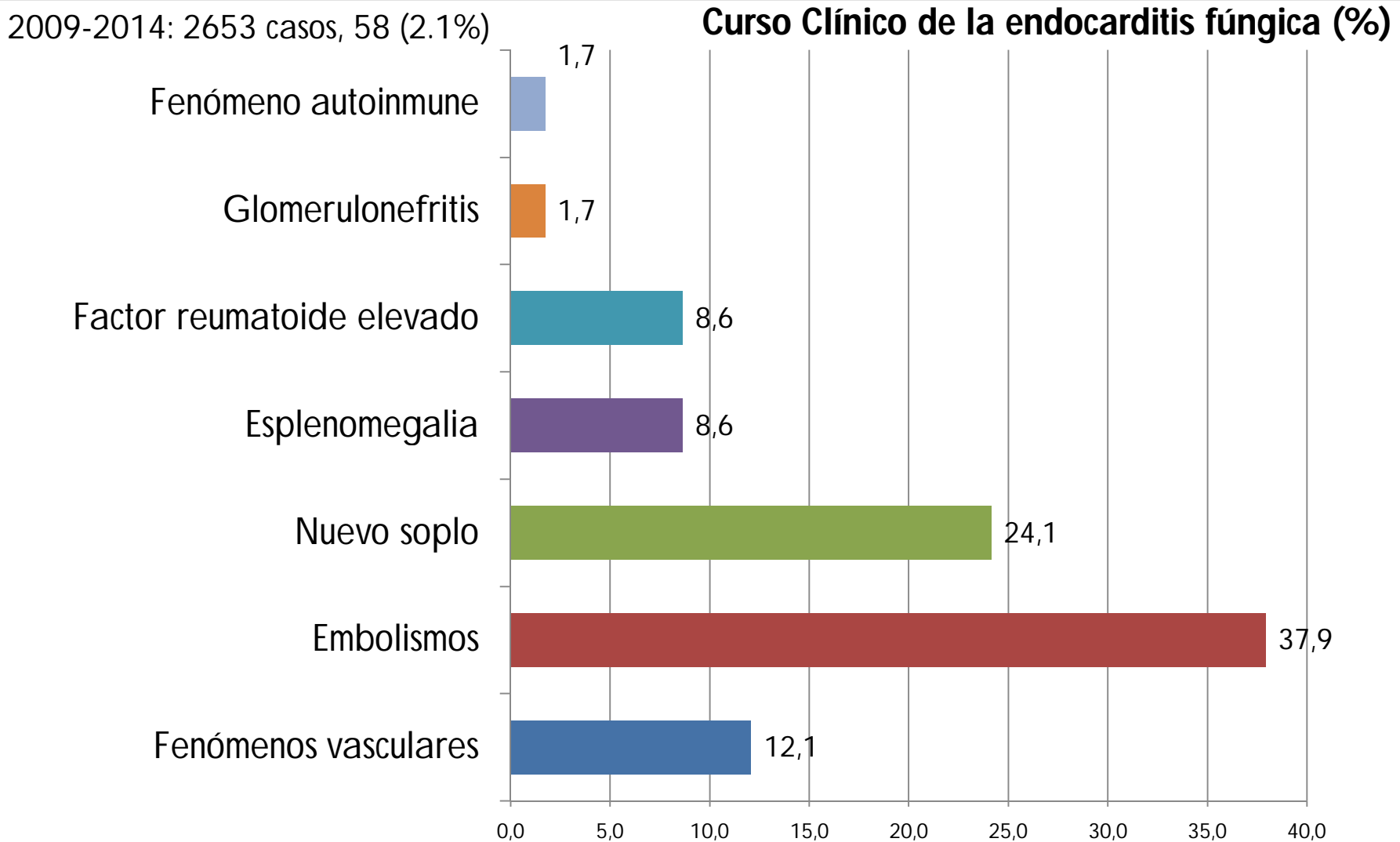
‡Includes pneumonia (n = 1), disseminated intravascular coagulation and pulmonary edema (n = 1), hemolytic anemia (n = 1), thrombus and pneumonia (n = 1), paravalvular abscess (n = 1), perianular complications not specified (n = 5), bradyarrhythmia (n = 1), and metabolic and hematological abnormalities (n = 1).

**Fungal endocarditis, 1995-2000.**

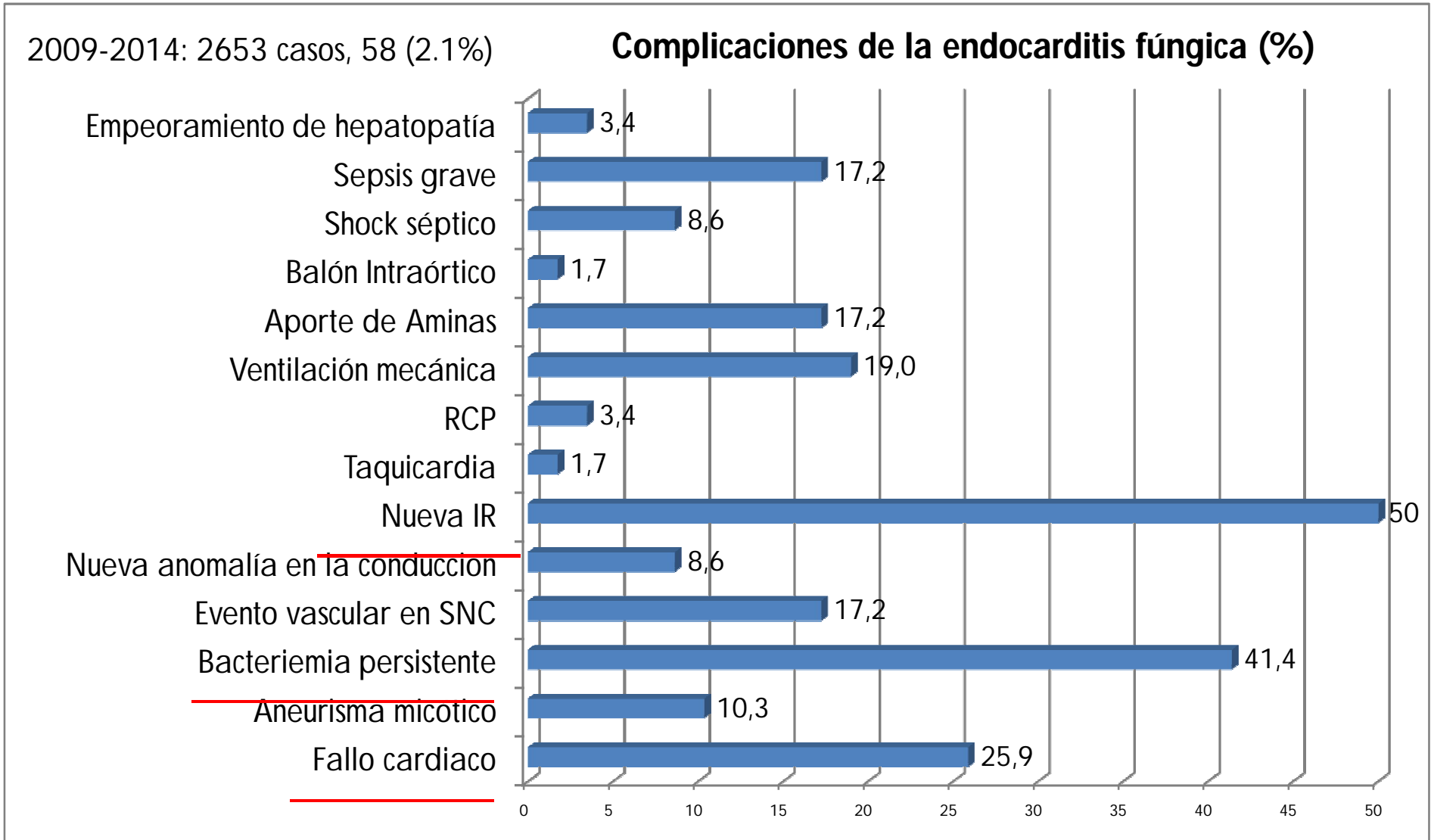
Pierrotti LC; Baddour LM

Chest. 122(1):302-10, 2002 Jul.

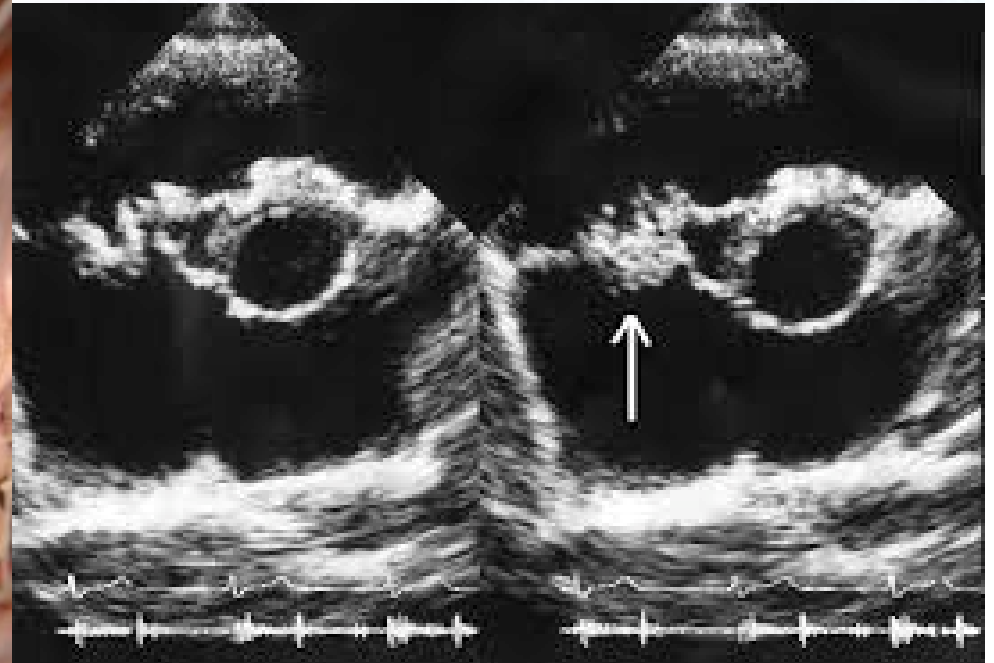
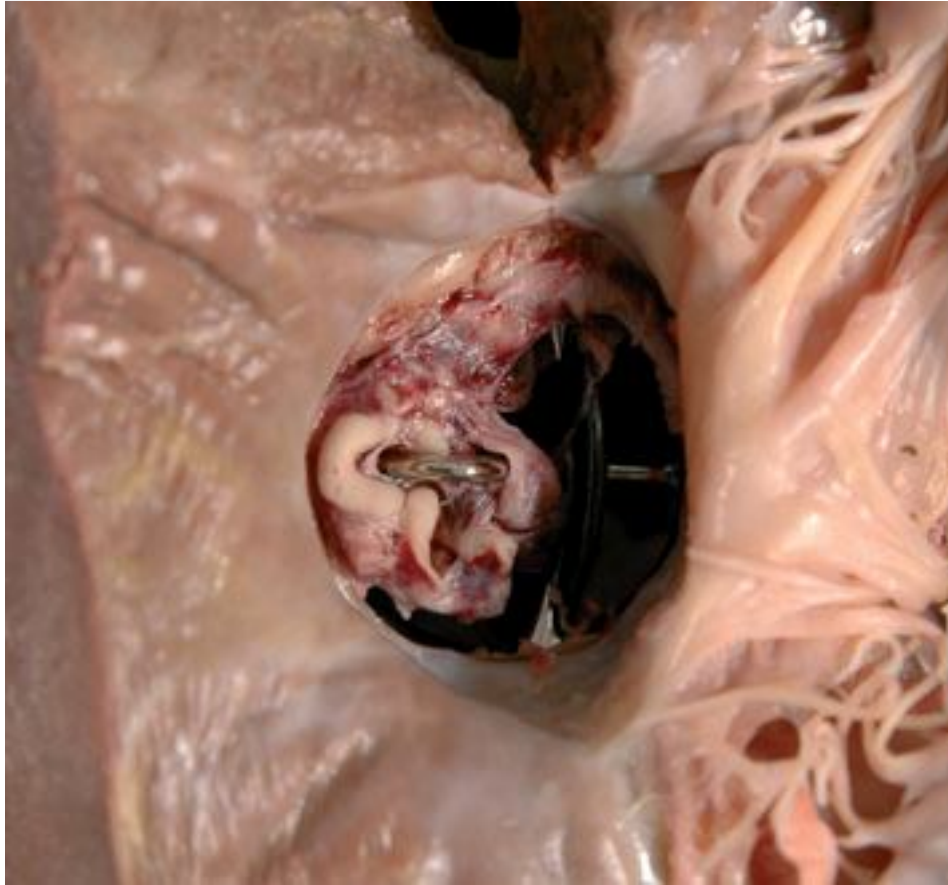
## Estudio Prospectivo de Endocarditis infecciosa en España (GAMES)



## Estudio Prospectivo de Endocarditis infecciosa en España (GAMES)



# ENDOCARDITIS FÚNGICA PROTÉSICA



## Fungal prosthetic valve endocarditis: Mayo Clinic experience with a clinicopathological analysis

Jennifer M. Boland,<sup>1</sup> Heath H. Chung,<sup>2</sup> Frans J. L. Robberts,<sup>1</sup> Walter R. Wilson,<sup>2</sup> James M. Steckelberg,<sup>2</sup> Larry M. Baddour<sup>2</sup> and Dylan V. Miller<sup>1</sup>

<sup>1</sup>Department of Laboratory Medicine and Pathology, Mayo Clinic, Rochester, MN, USA and <sup>2</sup>Department of Medicine, Mayo Clinic, Rochester, MN, USA

- **21 cases** of fungal prosthetic valve endocarditis at Mayo Clinic over the **past 40 years**
- The average patient age was **65 years** with a **2 : 1 male** predominance.
- Twelve of **21 cases (57%) occurred within 1 year** of prosthetic valve placement. The **aortic valve** was most commonly affected, and the most common aetiological agent was **Candida species**, followed by *Histoplasma capsulatum*.
- Although 20 of 21 patients (95%) were immunocompetent, they **had other risk factors** for fungal infection
- Patients typically presented with systemic signs and symptoms of infection, and cardiac imaging was abnormal in 68% of cases.

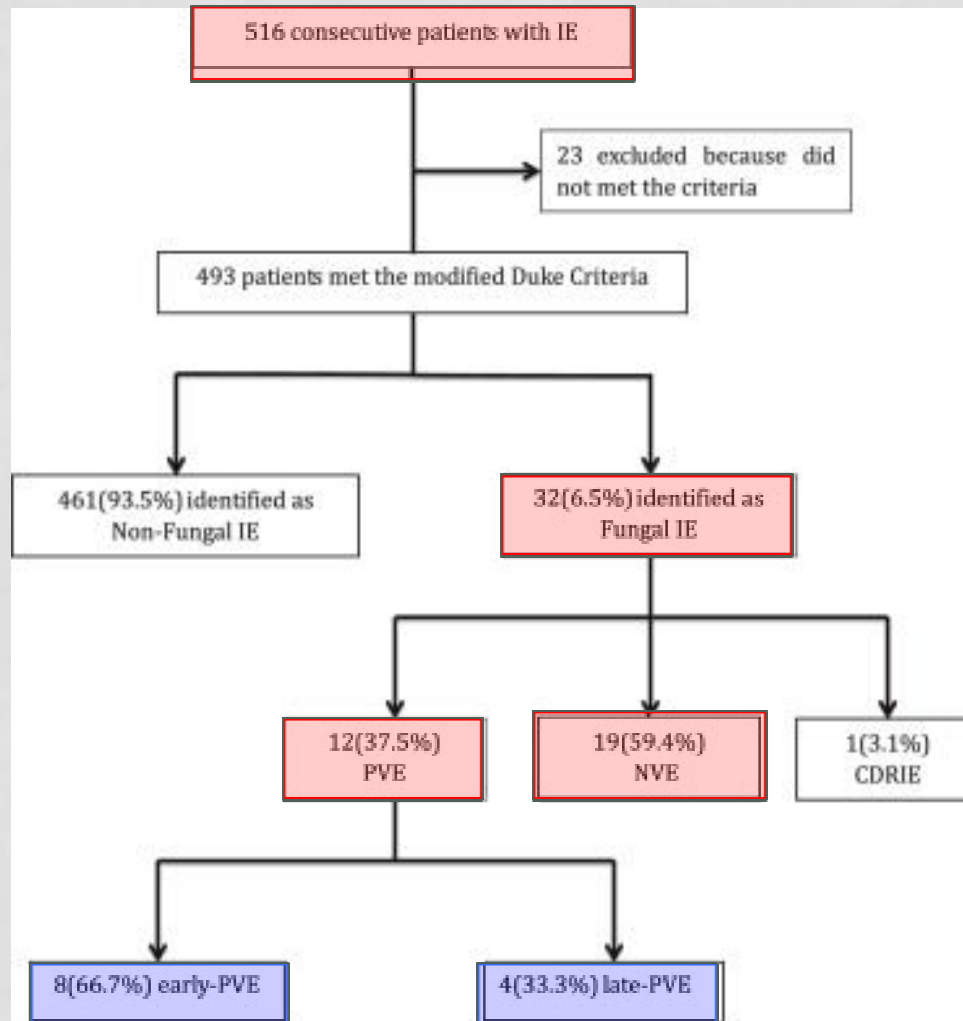


Figure 1 Study enrollment. Diagram shows the study enrollment and categories of IE patients.

Xiao-lu Sun , Jian Zhang , Guo-gan Wang , Xiao-feng Zhuang , Yan-min Yang , Jun Zhu , Hui-qiong Tan , Li-tian Yu

**Comparison of Characteristics and Short-Term Outcome From Fungal Infective Endocarditis in Prosthetic Valve Endocarditis Versus Native Valve Endocarditis**

The American Journal of Cardiology, Volume 112, Issue 1, 2013, 111 - 116

Comparison of characteristics and short-term outcome from fungal infective endocarditis in prosthetic valve endocarditis versus native valve endocarditis. The American journal of cardiology [0002-9149] Sun, Xiao-lu Año:2013 vol.:112 iss:1 pág.:111 -6

Clinical characteristics	All FE (n = 32)*	PVE (n = 12)	NVE (n = 19)	p Value
Mean age (yrs), median (IQR)	45 (32–57)	37 (25–53)	50 (41–57)	0.034
Men	22 (69%)	9 (75%)	13 (68%)	1.00
New precordial murmur	25 (78%)	8 (67%)	16 (84%)	0.384
Fever $\geq 38^{\circ}\text{C}$ at admission	22 (69%)	8 (67%)	14 (74%)	0.704
Skin lesions <sup>†</sup>	15 (47%)	5 (42%)	9 (47%)	1.00
Predisposing heart condition	31 (97%)	12 (100%)	18 (95%)	1.00
Valvular heart disease	19 (59%)	7 (58%)	11 (58%)	1.00
Congenital heart disease	11 (34%)	5 (42%)	6 (32%)	0.705
Hypertrophic cardiomyopathy	1 (3%)	0	1 (5%)	1.00
History of endocarditis	3 (9%)	3 (25%)	0	0.049
Intravenous drug user	1 (3%)	0	1 (5%)	1.00
Diabetes mellitus	7 (22%)	0	7 (37%)	0.026
Hypertension	3 (9%)	1 (8%)	2 (11%)	1.00
Immunocompromised state	7 (21%)	0	7 (37%)	0.026
Anemia (HB $\leq 100\text{g/L}$ )	20 (63%)	9 (75%)	11 (58%)	0.452
Echocardiography				
LVEF (%) median (IQR)	54.8 (49–61)	59.3 (45–66)	55.7 (43–62)	0.293
Valve involved				
Mitral	7 (22%)	1 (8%)	6 (32%)	0.201
Aortic	15 (47%)	5 (42%)	10 (53%)	0.716
Aortic and mitral	4 (13%)	1 (8%)	3 (16%)	1.00
Vegetation	25 (78%)	8 (67%)	16 (84%)	0.384
Vegetation diameter, median (IQR)	12 (8–17.8)	11 (8.3–21.8)	12 (7–17)	0.349
<10 (mm)	8 (25%)	3 (25%)	5 (26%)	1.00
10–15 (mm)	6 (19%)	2 (17%)	4 (21%)	1.00
>15 (mm)	10 (31%)	3 (25%)	6 (32%)	1.00
Moderate to severe regurgitation	19 (59%)	2 (17%)	17 (90%)	0.000
Perivalvular complications <sup>‡</sup>	14 (44%)	4 (33%)	10 (53%)	0.461



	All FE (n = 32)*	PVE (n = 12)	NVE (n = 19)	p Value
hsCRP increase at diagnosis (mg/L)	11.2 ± 3.3	8.7 ± 3.8	11.8 ± 3.0	0.106
ESR increase at diagnosis (mm/h), median (IQR)	38 (25.5–71.5)	32 (23–85)	38 (28–68)	0.703
HGB at diagnosis, (g/L, mm ± SD)	91.1 ± 18.8	93 ± 16.8	90.3 ± 20.8	0.704
ALB at diagnosis, (g/L, mm ± SD)	32 ± 6.3	36.54 ± 6.4	29.2 ± 4.5	0.001
Cr at diagnosis (μmol/L), median (IQR)	91 (60–167)	93 (48.2–162.7)	91 (70.1–171.5)	0.525
Single infection	22 (69%)	8 (67%)	13 (68%)	1.00
Multiple infection	10 (31%)	4 (33%)	6 (32%)	1.00
Organisms				
<i>C albicans</i>	15 (47%)	4 (33%)	10 (53%)	0.461
<i>C parapsilosis</i>	6 (19%)	3 (25%)	3 (16%)	0.653
Other <i>Candida</i> †	3 (9%)	2 (17%)	1 (5%)	0.543
Filamentous fungi	6 (19%)	5 (42%)	1 (5%)	0.022
<i>Histoplasma capsulatum</i>	2 (6%)	1 (8%)	1 (5%)	1.00

ALB = albumin; CR = creatinine; CRP = C-reactive protein; ESR = erythrocyte sedimentation rate; FE = fungal infective endocarditis; HGB = hemoglobin; IQR = interquartile range.

	All FE (n = 32)*	PVE (n = 12)	NVE (n = 19)	p Value
Mean hospital stay duration, median (IQR)	24 (16–59)	42 (14–59)	22 (16–60)	0.929
≥1 complication	30 (94%)	10 (83%)	19 (100%)	0.142
Uncontrolled infection	12 (38%)	3 (25%)	9 (47%)	0.274
<b>Congestive heart failure</b>	<b>24 (75%)</b>	<b>5 (42%)</b>	<b>18 (95%)</b>	<b>0.002</b>
Acute renal failure	11 (34%)	3 (25%)	8 (42%)	0.452
Total embolic events	15 (47%)	7 (58%)	8 (42%)	0.473
Renal emboli	8 (25%)	5 (42%)	3 (16%)	0.206
Cerebral emboli	6 (19%)	3 (25%)	3 (16%)	0.653
Splenic emboli	3 (12%)	0	3 (16%)	0.265
Other emboli†	7 (58%)	2 (17%)	5 (26%)	0.676
Cardiac surgery	12 (38%)	7 (58%)	5 (26%)	0.130
In-hospital mortality	12 (38%)	4 (33%)	8 (42%)	0.717
Follow-up				
3-month mortality	15 (47%)	4 (33%)	11 (58%)	0.273
<b>Recurrence of infection</b>	<b>6 (19%)</b>	<b>5 (42%)</b>	<b>1 (5%)</b>	<b>0.022</b>
Total embolic events	3 (9%)	1 (8%)	2 (11%)	1.00

Comparison of characteristics and short-term outcome from fungal infective endocarditis in prosthetic valve endocarditis versus native valve endocarditis. The American journal of cardiology [0002-9149] Sun, Xiao-lu Año:2013 vol.:112 iss:1 pág.:111 -6

# Ideas para llevarse a casa

1-3% endocarditis son fúngicas (5-15% de protésicas)

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**Razones aumento:** mas CIA CV, mas pacientes inmunodeprimidos, uso de antibióticos de amplio espectro, hospitalizaciones prolongadas, uso de catéteres vasculares centrales/nutrición parenteral

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**Gérmes:** cándida y aspergillus

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Clínica similar a endocarditis bacteriana. Si frecuente los **embolismos arteriales**

