



Sociedad Médica de Santiago
Sociedad Chilena de Medicina Interna
150 años al Servicio de la Medicina

IX CURSO MEDICINA INTERNA HOSPITALARIA 2019

Endocarditis Infecciosa

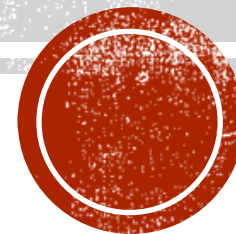
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ENDOCARDITIS INFECCIOSA



CONTENIDOS

- Introducción
- Epidemiología: Mundial y Chile
- Fisiopatología: breve
- Aproximación clínica y estudios complementarios
- Microbiología
- Tratamiento: médico y quirúrgico



INTRODUCCIÓN

- GRAN ESPECTRO DE PRESENTACIONES:
 - **AGUDA** vs SUBAGUDA CON O SIN COMPLICACIONES
 - MICROORGANISMOS: MÁS **AGRESIVOS** (EJ S AUREUS) O “LENTOS” (EJ S. EPIDERMIDIS)
 - PACIENTES: SANOS, CONGÉNITOS, REUMÁTICOS, **CIRUGÍAS PREVIA.**

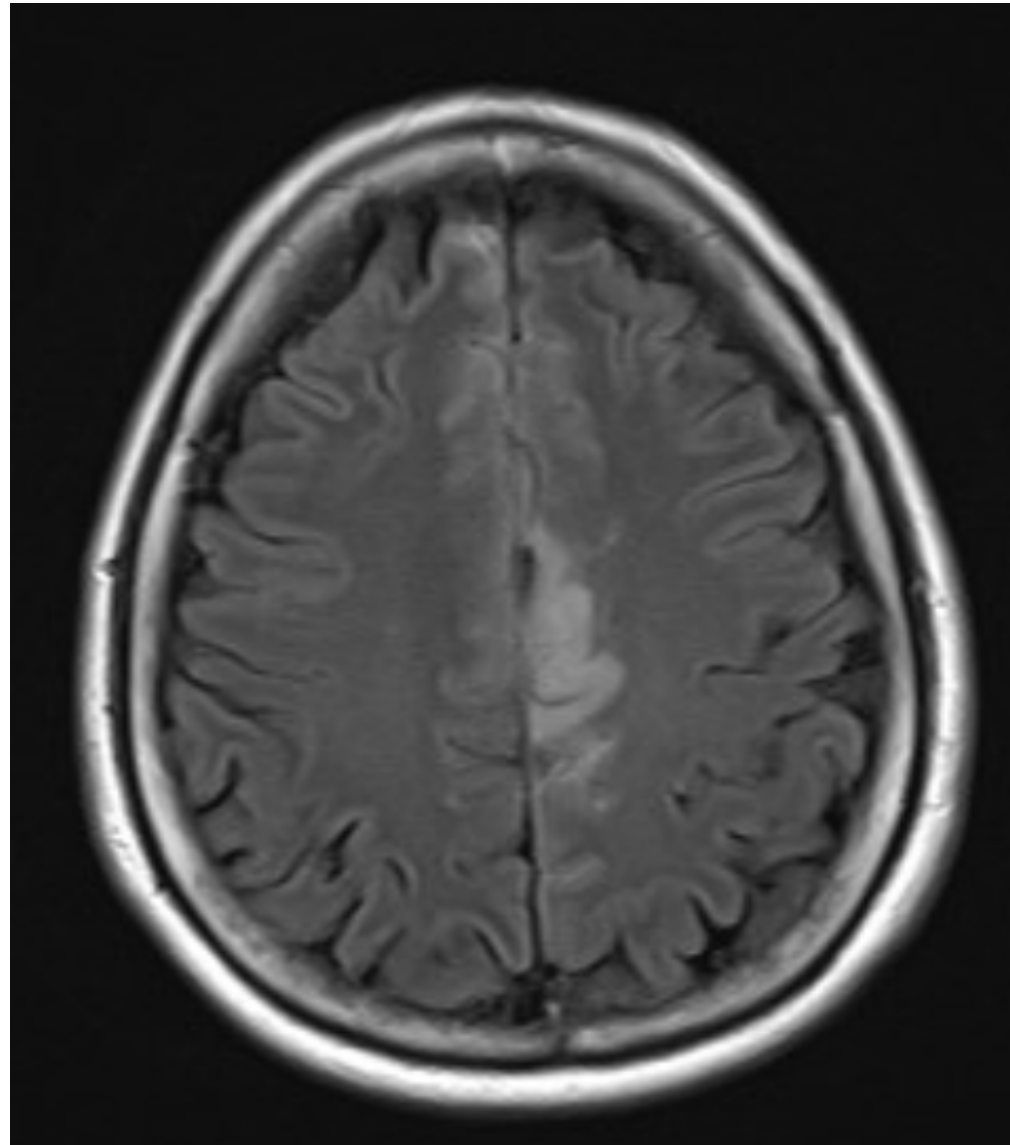


EJEMPLOS

- DE LA VIDA REAL...



ACV+ FIEBRE



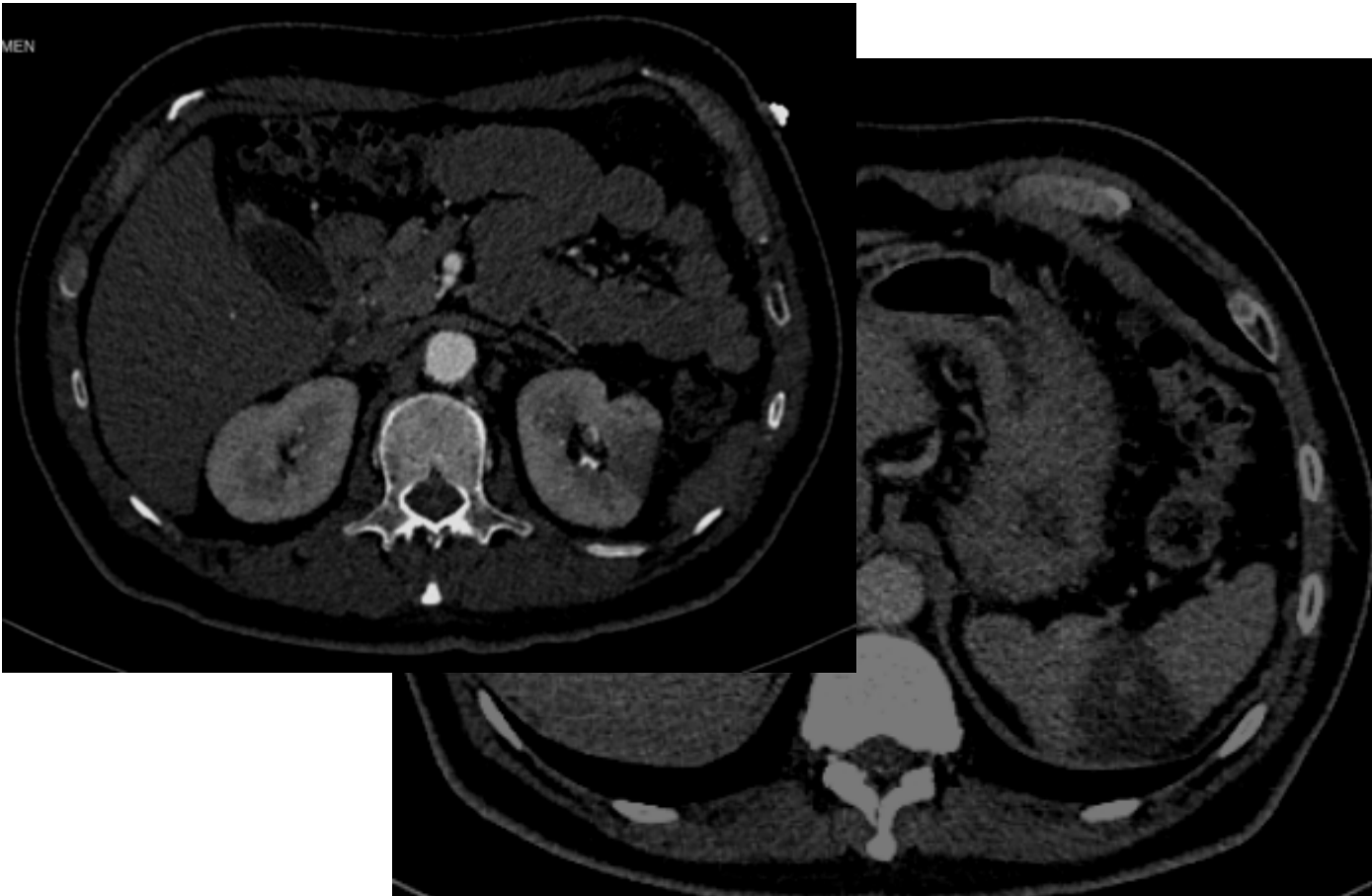
ENDOCARTIDIS
AORTICA POR
ENTEROCOCCO

ADULTO MAYOR
CON
VALVULOPATÍA
DEGENERATIVA
(SIN DIAGNÓSTICO
PREVIO)

ACV isquémico territorio ACA, HSA de la convexidad



DOLOR ABDOMINAL + FIEBRE



ENDOCARTIDIS VÁLVULA
AORTICA
HC (-) POR ATB PREVIO

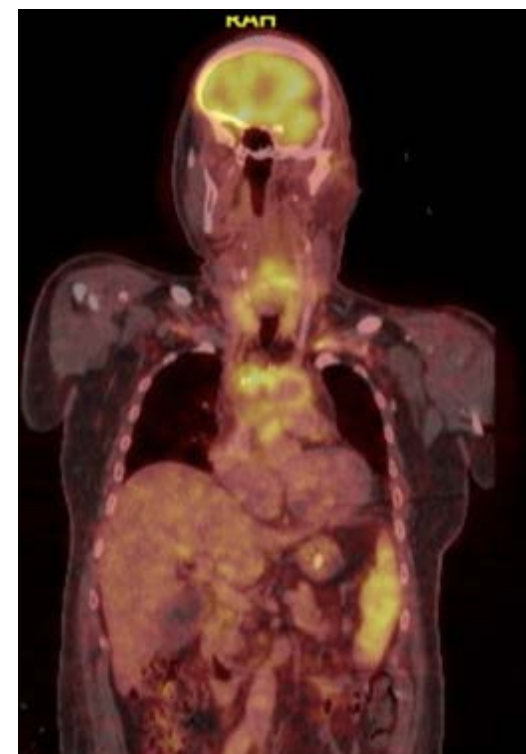
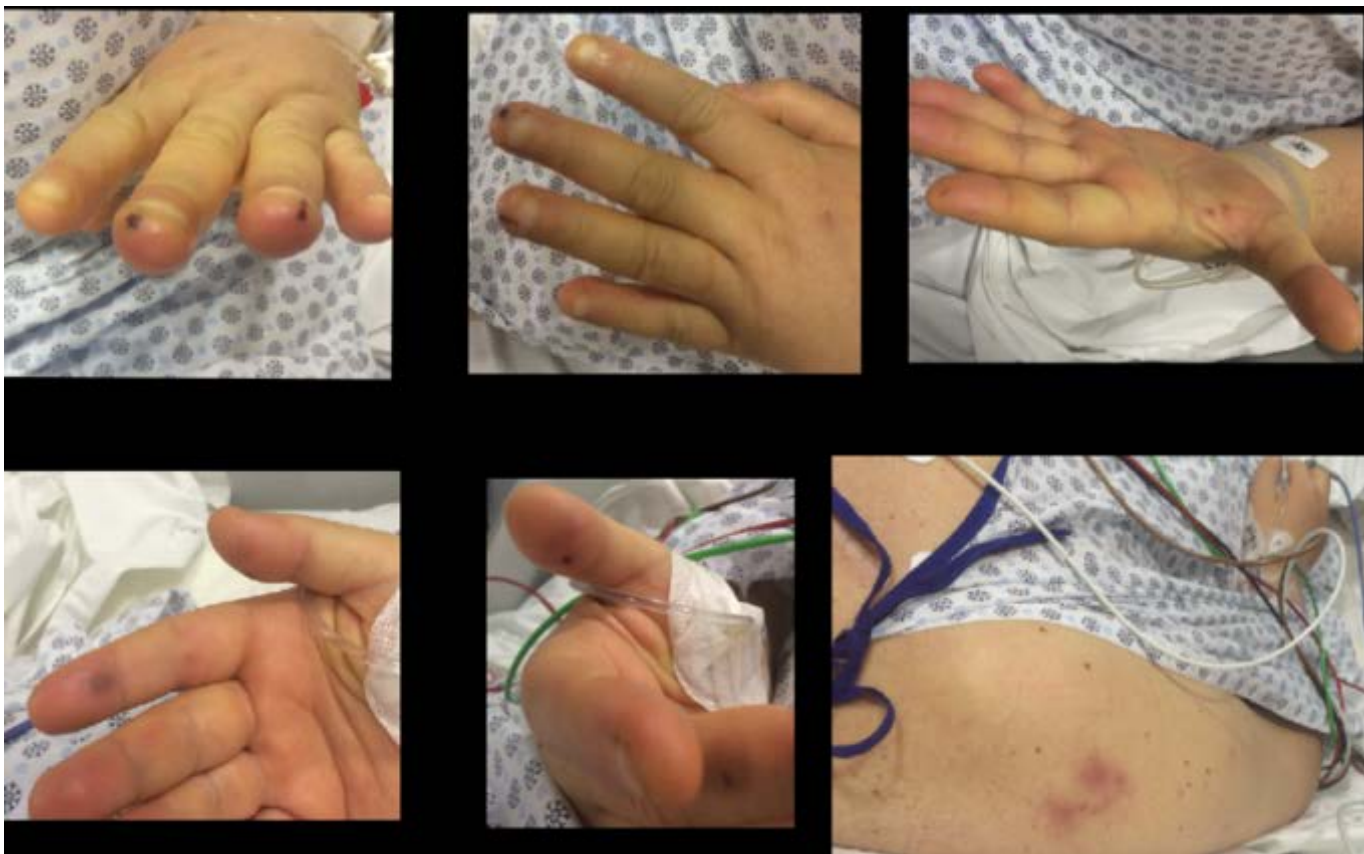
ADULTO JOVEN,
4TO MES POST
RECAMBIO
VALVULAR
AÓRTICO



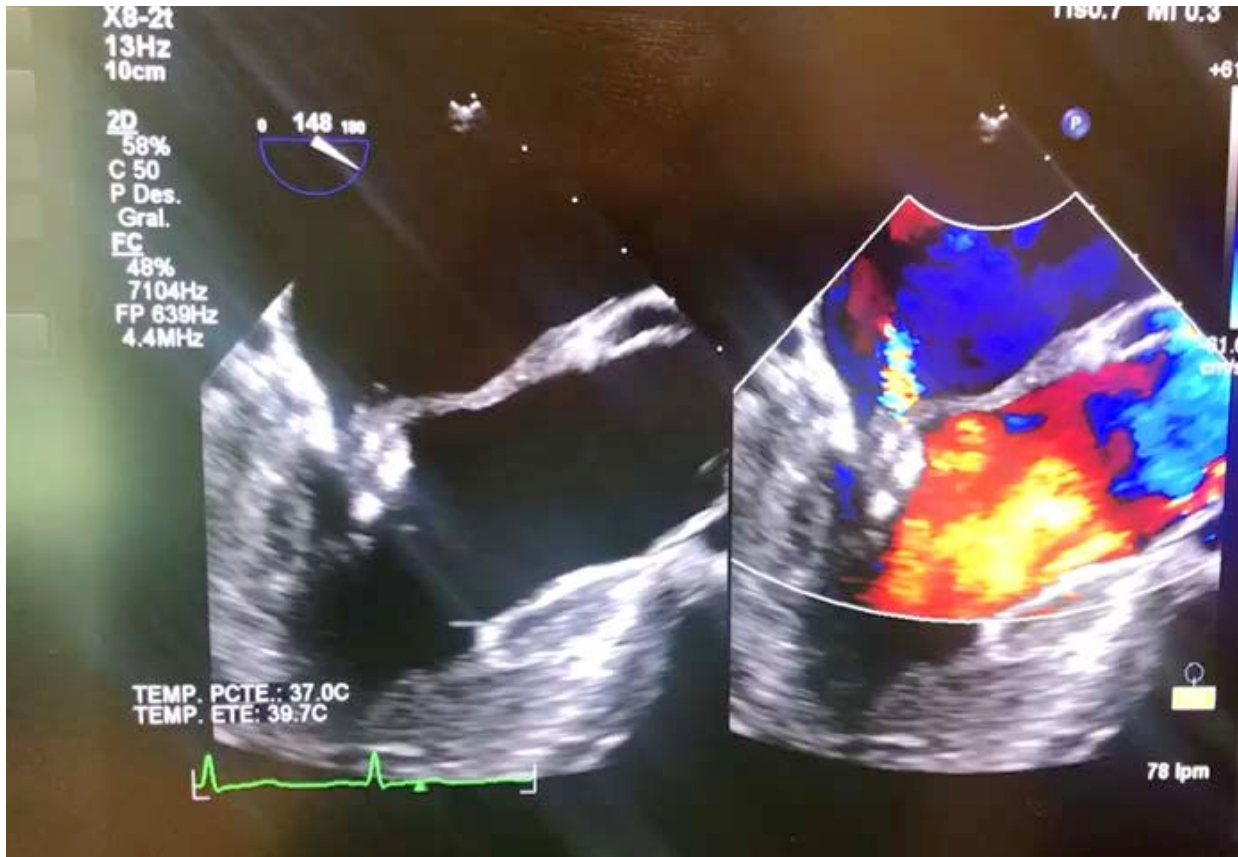


LESIONES EMBOLICAS + FIEBRE

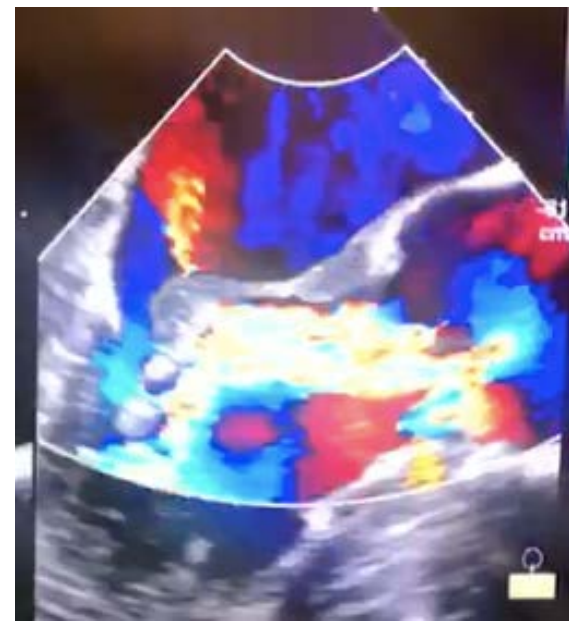
ENDOCARTIDIS PROTESIS
ARCO AORTICO
STAFILO AUREUS



SHOCK SÉPTICO: 15 AÑOS



ENDOCARTIDIS
AORTICA
BICÚSPIDE



FALLA RESPIRATORIA: 25 AÑOS

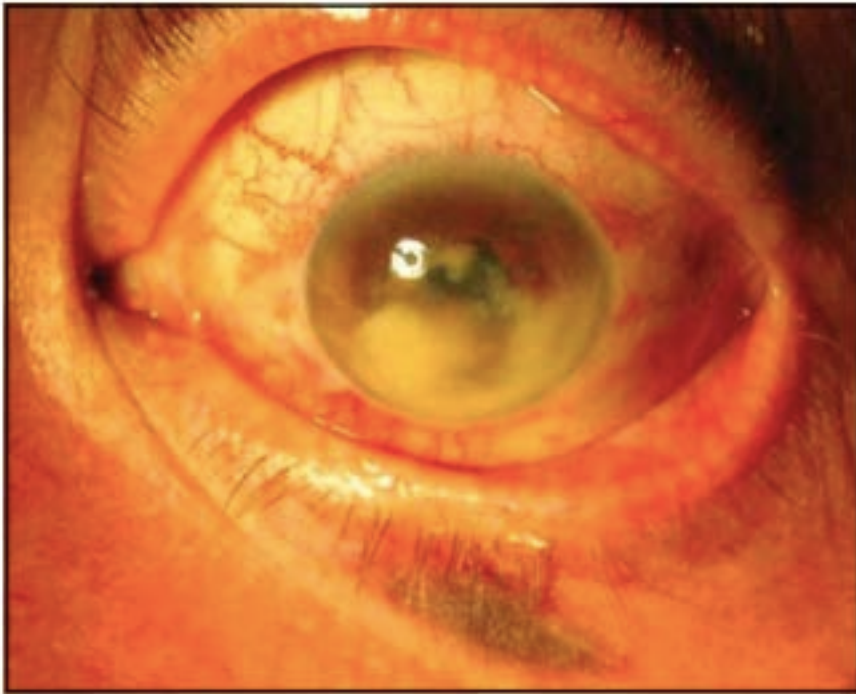


ENDOCARTIDIS AORTICA
PERFORACIÓN VALVULAR

JOVEN, BICUSPIDE, VARIOS
TRATAMIENTOS PARA
NEUMONÍA MULTILOBAR



ENDOFTALMITIS



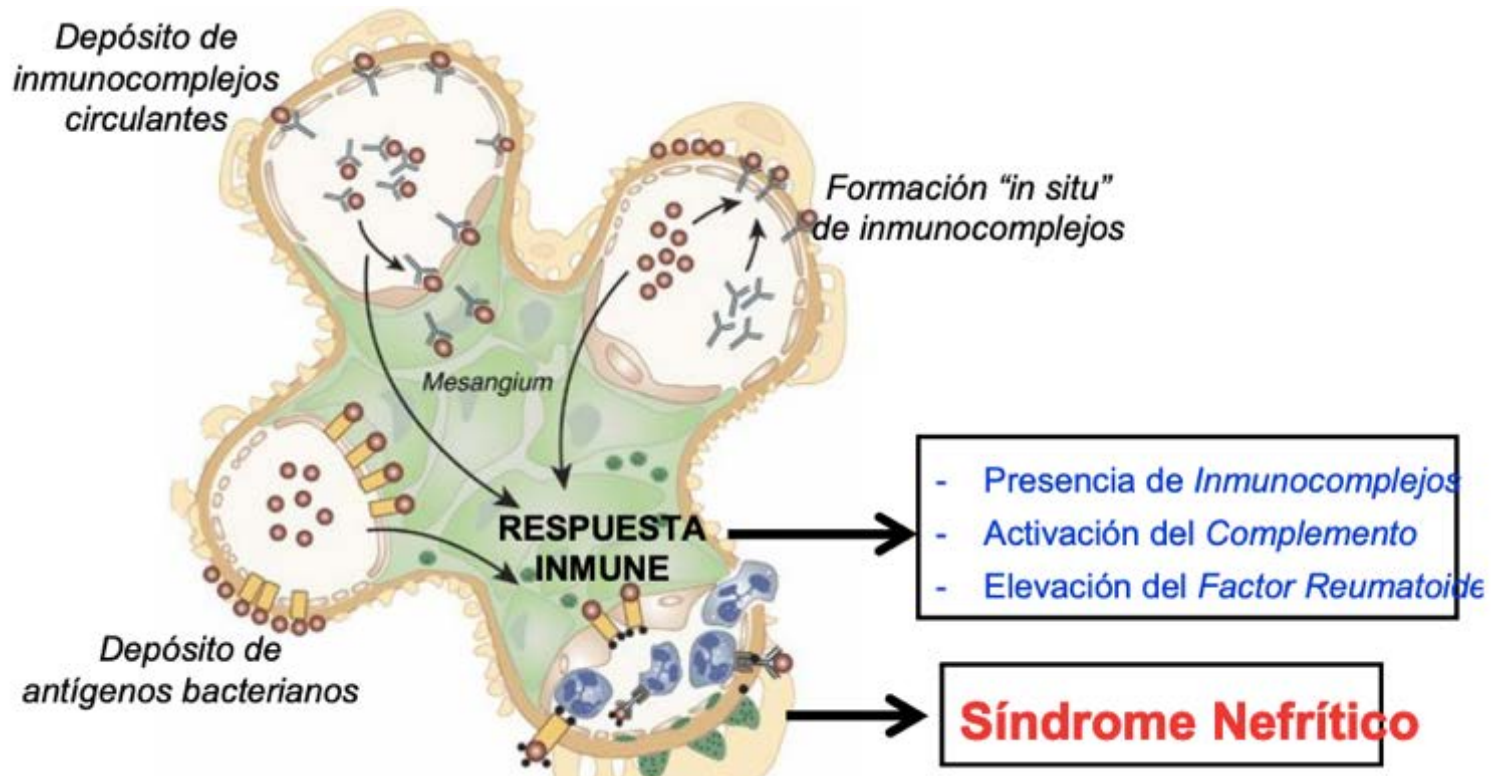
ENDOCARTIDIS MITRO-AORTICA
Endoftalmitis por infeccion
hematógena

ADULTO MAYOR, BAJO PESO, SIN
CARDIOPATÍA PREVIA.
HALLAZGO EN ESTUDIO ORIGEN
ENDOFTALMITIS

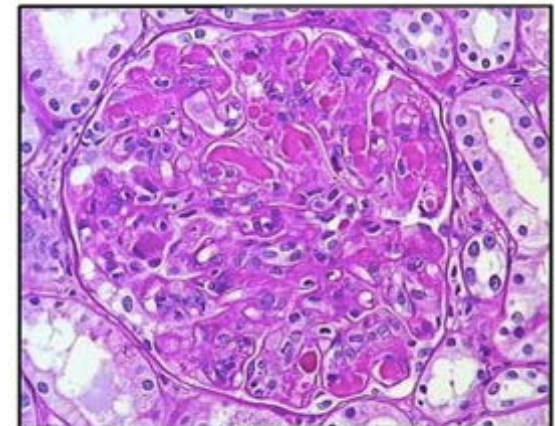




SÍNDROME NEFRÍTICO



Hombre edad media
Falla renal aguda
Hematuria glomerular
Complemento bajo
ANA (-) ANCA (-)



Glomerulonefritis DIFUSA



EPIDEMIOLOGIA



EN EL MUNDO



EN AMÉRICA



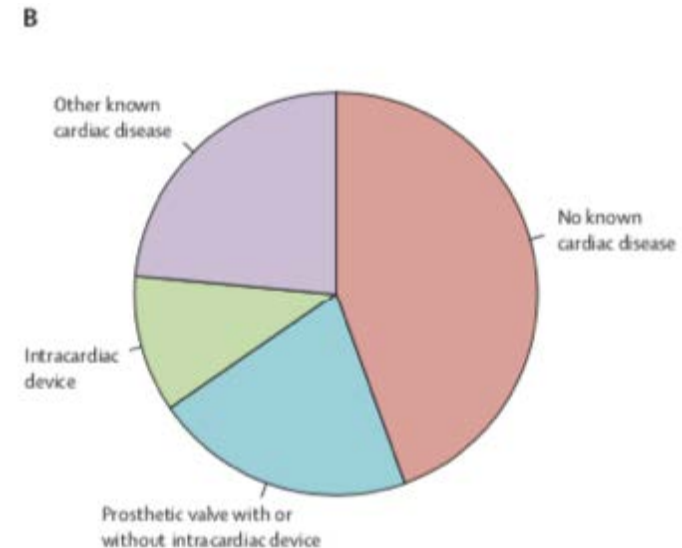
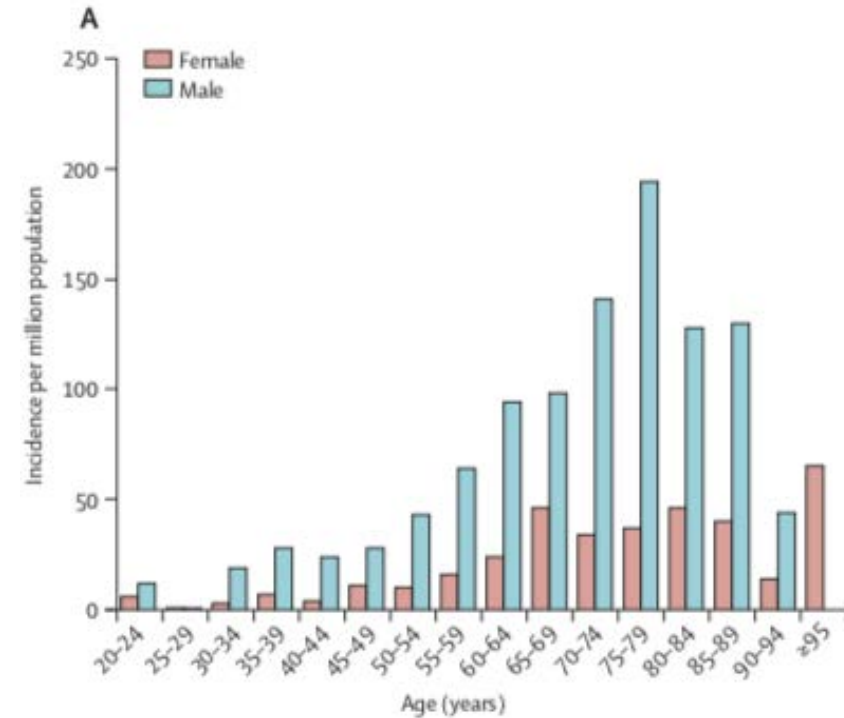
EN CHILE



EL MUNDO

- Escenario asdverso
 - Enfermedad “rara” pero **FRECUENCIA EN AUMENTO**
 - Enfermos más **AÑOSOSO**
 - Mayor presencia de dispositivos (**PRÓTESIS** - marcapasos)
 - Gérmenes más virulentos/**RESISTENTES**
 - **45% SIN CARDIOPATÍA PREVIA**

Lancet 2016; 387: 882–93



EN EL MUNDO: MICROBIOLOGÍA

Stafilo
+
strepto
+
enterococo
= 80%

HC (-) = 10%

Total Cohort
n = 2781 n
(%)

<i>S. aureus</i>	869 (31)
Coag Neg staph.	304 (11)
Viridans group strep	483 (17)
<i>S. bovis</i>	165 (6)
Other strep	162 (6)
Enterococci	283 (10)
HACEK	44 (2)
Fungi / yeast	45 (2)
Polymicrobial	28 (1)
Culture negative	277 (10)
Other	121 (4)



A. Vegetation Findings

Vegetation present	2406/2764 (87)
AV	1031/2741 (38)
MV	1125/2740 (41)
TV	323/2741 (12)
PV	29/2739 (1)

B. Complications

Stroke	462/2727 (17)
Embolization, non-stroke	611/2709 (23)
CHF	876/2713 (32)
Intracardiac abscess	389/2707 (14)
Persistent positive blood culture	251/2699 (9)
New conduction abnormality	217/2695 (8)

C. Treatment/Outcome

Surgical therapy	1335/2769 (48)
In-hospital mortality	490/2774 (18)

EL MUNDO: COMPLICACIONES

Vegetaciones = 87% (no todos)

30% tuvo ICC

40% tuvo embolías

50% termina en cirugía



ARGENTINA

Valvular and Congenital Heart Disease

Epidemiologic, clinical, and microbiologic profile of infective endocarditis in Argentina: A national survey. The Endocarditis Infecciosa en la República Argentina-2 (EIRA-2) Study

Ernesto Ferreiros, MD,^a Francisco Nacinovich, MD,^b Jose Horacio Casabé, MD, PhD, FACC,^c
Juan Carlos Modenesi, MD,^d Sandra Swieszkowski, MD,^a Claudia Cortes, MD,^c Cohen Arazi Hernan, MD,^a
Lucía Kazelian, MD,^c and Sergio Varini, MD, FACC,^a on behalf of the EIRA-2 Investigators^f *Buenos Aires, Argentina*



ARGENTINA

- 3 SEMANAS PARA DIAGNOSTICAR
- 65% SE COMPLICAN
- 25% MORTLIDAD INTRAHOSPITALARIA

Table IV. Comparison between the results of 1992-1993 (285 patients) and 2001-2002 (452 patients) surveys of IE in Argentina according to Duke criteria

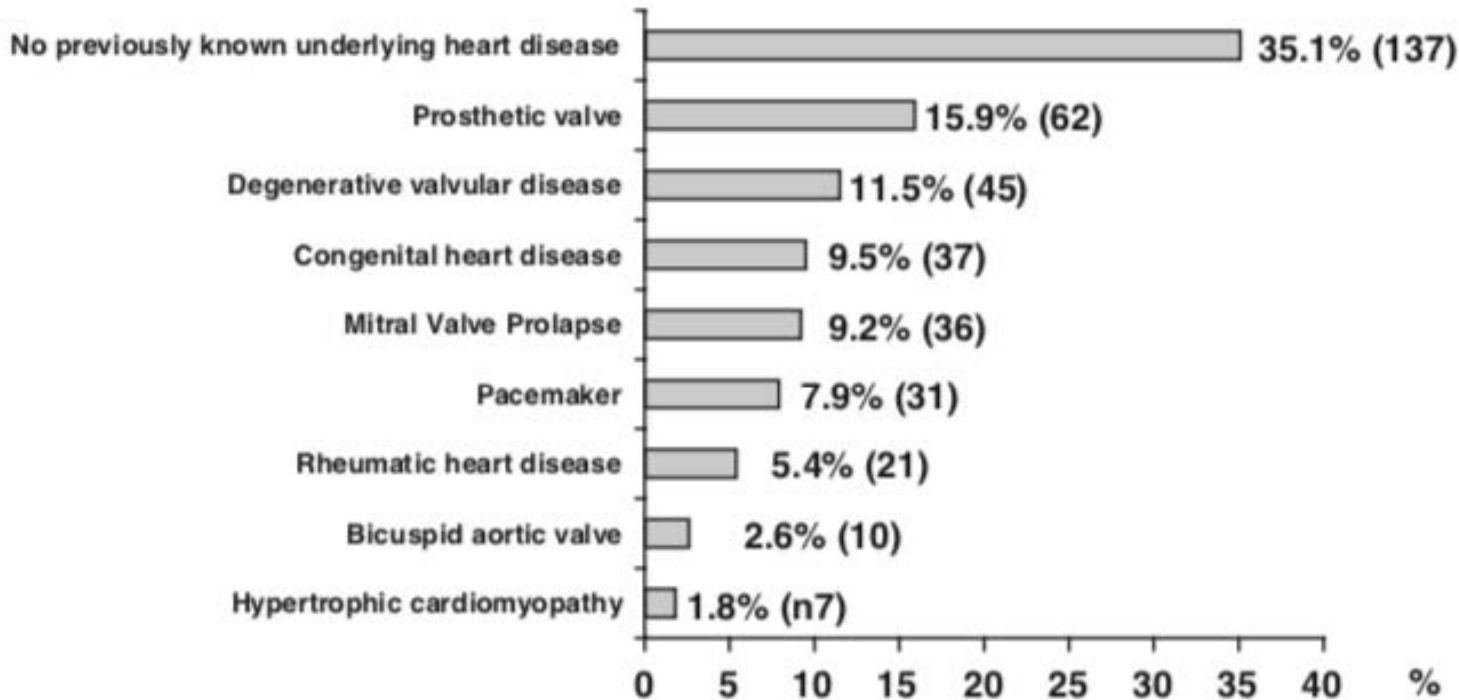
	1992-1993 survey	2001-2002 survey
No. of participating centers	33	82
No. of IE episodes	294	470
Duke definite (%)	75.5	83
Age (y) (mean $\pm$ SD)	51.3 $\pm$ 18.7	58.1 $\pm$ 17.6
Male-female ratio	2.3:1	2.3:1
IVDA (%)	13.5	3.8
Unknown underlying heart disease (%)	45	33.8
Prosthetic valve disease (%)	8.5	19.2
Degenerative valve disease (%)	4.8	12.4
Rheumatic heart disease (%)	13.0	5.5
Congenital heart disease (%)	4.2	9.5
Mitral prolapse (%)	9.5	8.2
Previous IE (%)	10.2	11.3
Negative hemocultures (%)	20.4	17.7
Previous antibiotic administration (%)	60	63.2
<i>S viridans</i> (%)	30.8	26.8
Other streptococci (%)	16.2	12.6
<i>S aureus</i> (%)	26	30
Coagulase-negative staphylococci (%)	1.7	8
Enterococcus (%)	11	10.8
Days to diagnosis (average)	33	21.5
Complications during inhospital evolution (%)	69.4	67.0
Cardiac surgery (%)	28.2	24.3
Hospital mortality (%)	23.5	24.3

STAFILO
+
ESTREPTO
+
ENTEROCOCO
= 85%

17% HC
NEGATIVO



ARGENTINA



- **35% SIN
CARDIOPATÍA
PREVIA**

- (Y OTROS VARIOS QUE NO CONOCEN SU
CARDIOPATÍA)



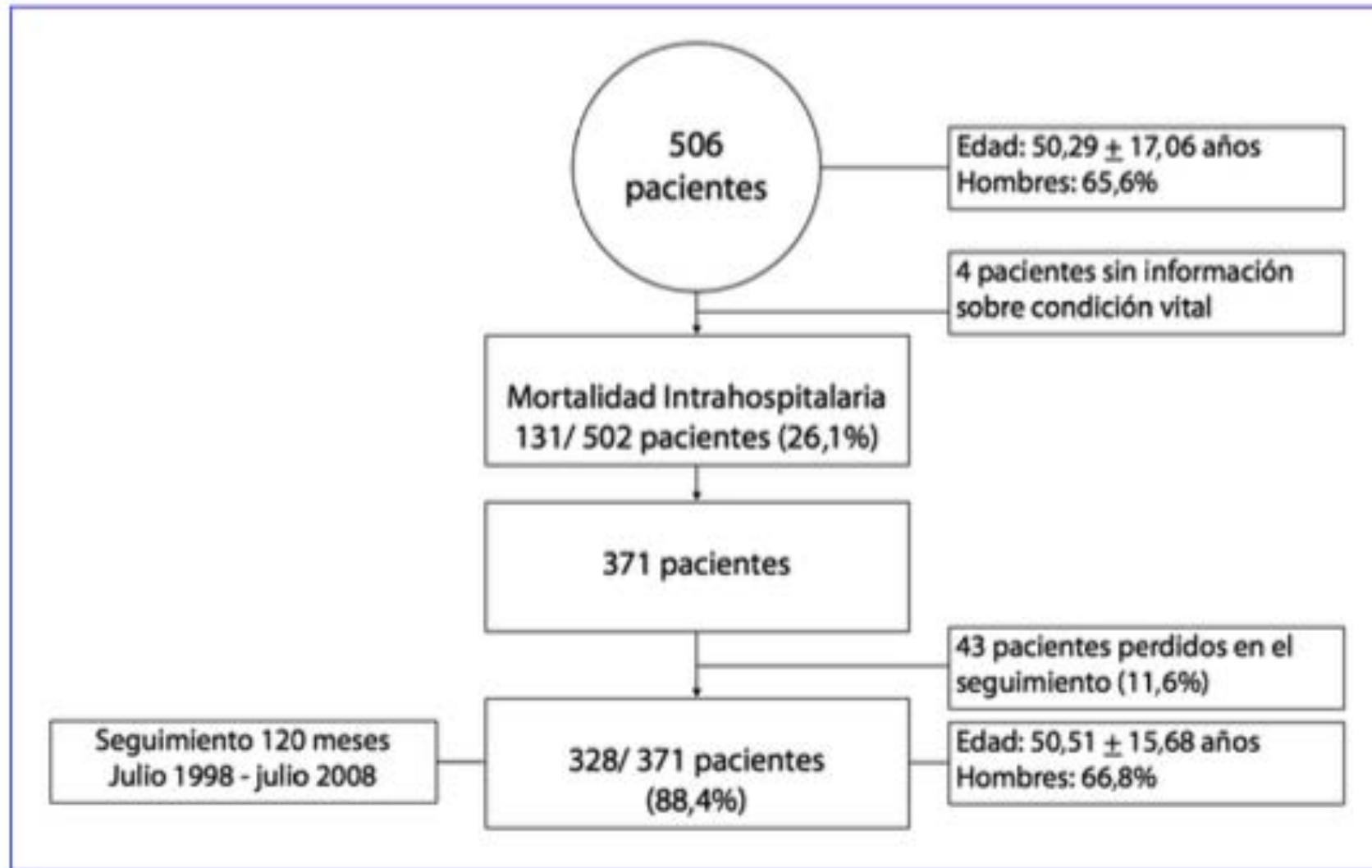
CHILE

Rev Med Chile 2012; 140: 1517-1528

Endocarditis infecciosa: características clínicas, complicaciones y mortalidad en 506 pacientes y factores pronósticos de sobrevida a 10 años (1998-2008). Estudio cooperativo nacional en endocarditis infecciosa en Chile (ECNEI-2)

MIGUEL OYONARTE¹, RODRIGO MONTAGNA², SANDRA BRAUN³,
PAMELA ROJO⁴, JOSÉ L. JARA², MAURICIO CERECEDA⁵,
MARCELO MORALES⁶, CAROLINA NAZAL³, FAUSTINO ALONSO⁷





Característica	Hallazgo	
	n	(%)
Variables demográficas		
Edad, promedio $\pm$ DE años	50,2 (rango: 12 - 88) $\pm$ 17,0	
Hombres	332	65,6
EI Definida	461	91,1
Período de latencia (días)	35,9 (rango: 1 - 365) $\pm$ 43,9	
Forma Subaguda	286	63,1
Condiciones cardiovasculares predisponentes		
Enfermedad reumática	112	22,1
Prótesis valvular	71	14,0
Cardiopatía congénita	70	13,8
Degenerativa (esclerocálcica)	41	8,1
Catéter intravenoso	32	6,3
Mixomatosis	22	4,3
Marcapasos	16	3,1
Cirugía cardíaca previa	10	1,9
Sin evidencia de cardiopatía	132	26,0

- **26% SIN
CARDIOPATÍA
PREVIA**

- (Y OTROS VARIOS QUE NO CONOCEN SU CARDIOPATÍA)

Comorbilidades		
Hemodiálisis	64	12,6
Drogadicción intravenosa	4	0,7
HIV positivo	2	0,3
Diabetes mellitus	61	12,0
Inmunosupresores	8	1,5
Endocarditis infecciosa previa	11	2,1
Microorganismos aislados		
<i>Staphylococcus aureus</i>	95	29,0
<i>Streptococcus</i> grupo	75	22,9
Otros <i>Streptococcus</i>	69	21,1
Estafilococo coagulasa negativo	36	11,0
Enterococo	24	7,3
Bacilos Gram negativos	17	5,2
Hongos	6	1,8
HACEK	5	1,5
Hemocultivos negativos	168	33,2
Sin información	11	2,1

- **33% HC NEGATIVO!!**

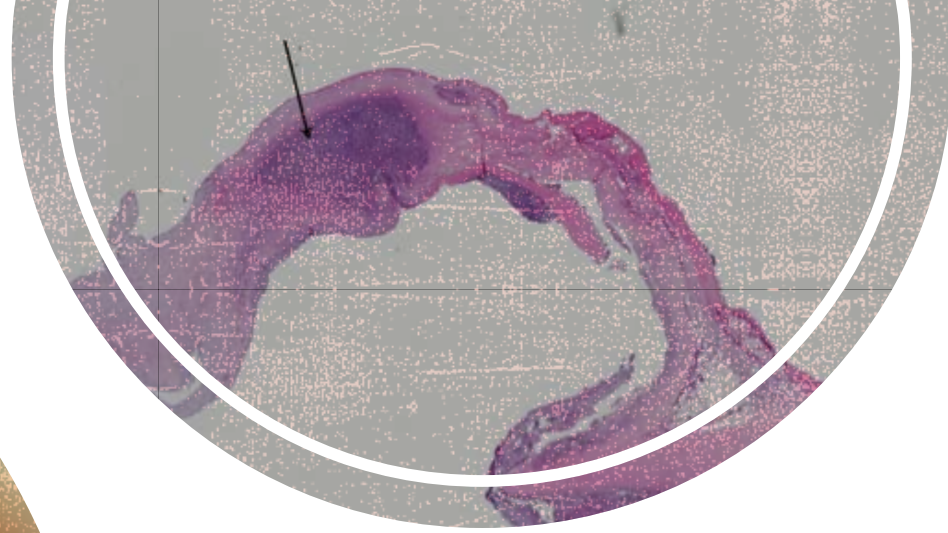
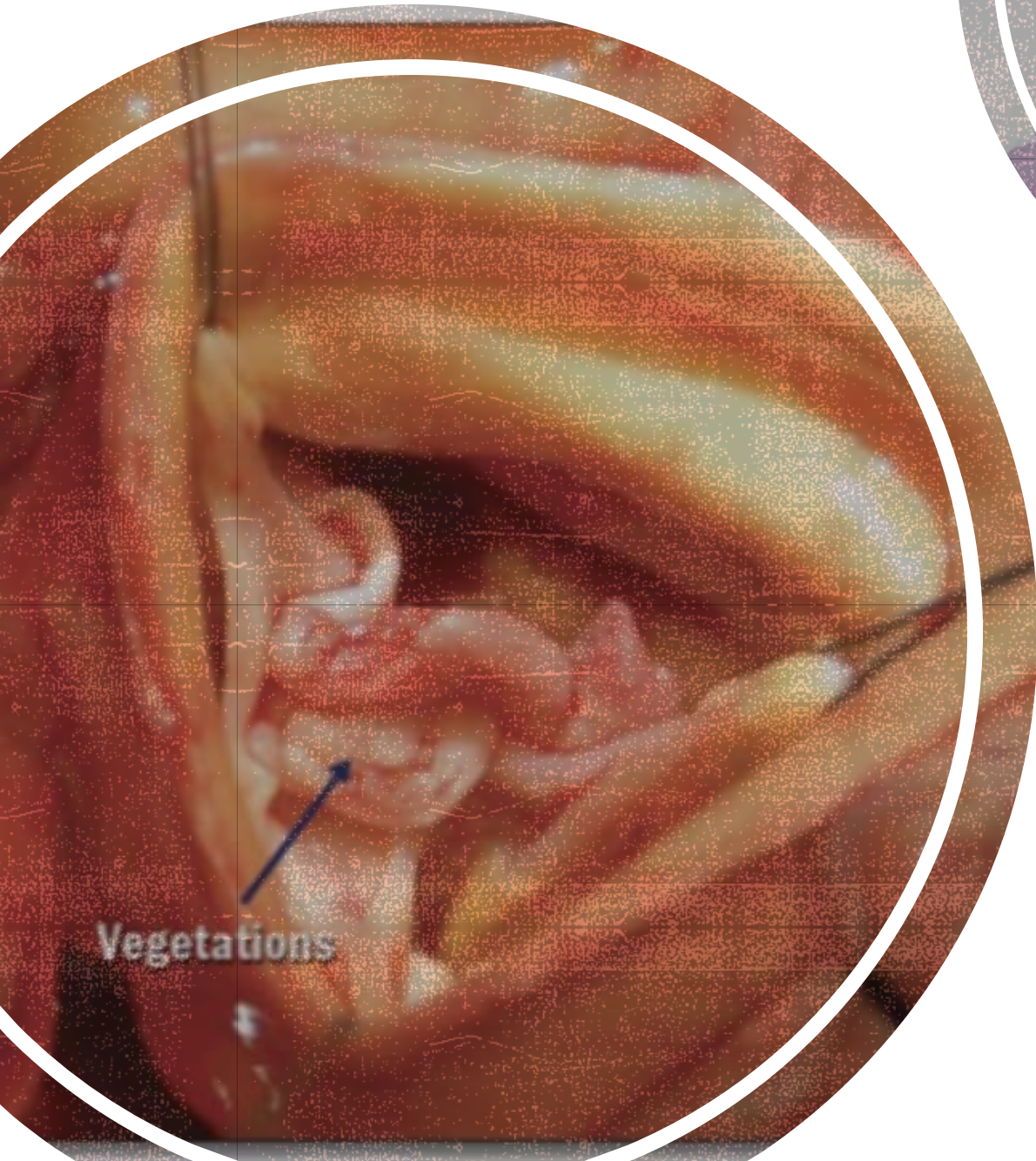
- STAFILO + ESTREPTO+ENTEROCOCO = 90%

Tabla 2. Complicaciones, tipo de tratamiento, indicaciones de cirugía y pronóstico en 506 pacientes con Endocarditis Infecciosa (período intrahospitalario)

Característica	Hallazgo	
	n	(%)
Complicaciones		
Insuficiencia cardíaca	262	51,7
Embolismo (sistémico, pulmonar)	155	30,6
Insuficiencia renal	133	26,2
Tipo de tratamiento		
Médico (conservador)	273	53,9
Quirúrgico	179	35,3
Indicaciones de cirugía*		
Complicaciones intra cardíacas (rotura, perforación, abscesos)	131	73,1
Insuficiencia cardíaca	114	63,6
Infección persistente	55	30,7
Vegetaciones > 10 mm	53	29,6
Disfunción de prótesis valvular	18	10,0
Embolismo múltiple	17	9,4
Endocarditis de marcapasos	4	2,2
Pronóstico *		
Fallece	131	26,1
Sobrevive	371	73,9
Mortalidad quirúrgica	28	15,6

- 50% SE COMPLICAN
- 35% termina en cirugía
- 25% MORTALIDAD INTRAHOSPITALARIA



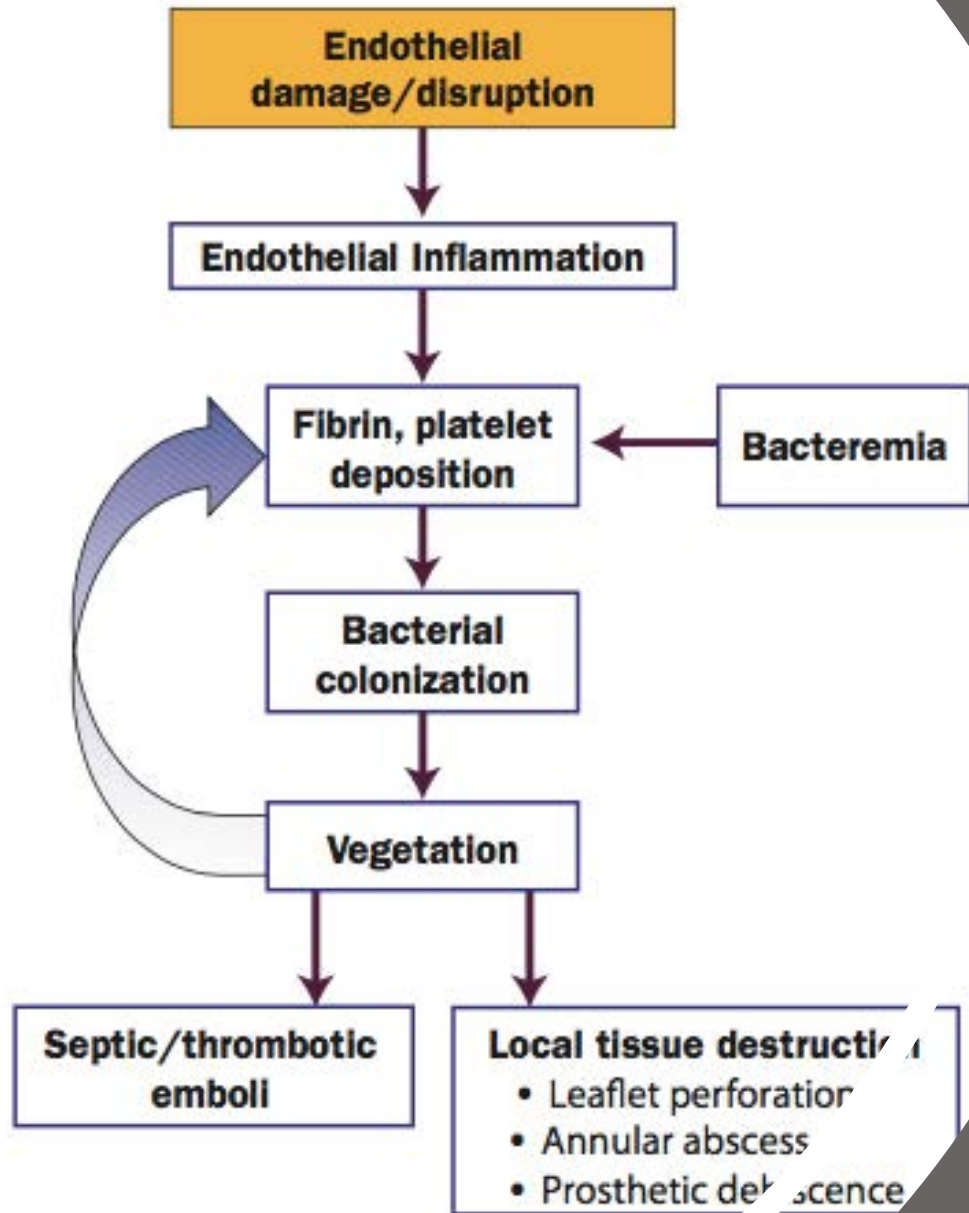


FISIOPATOLOGÍA

- Lo general



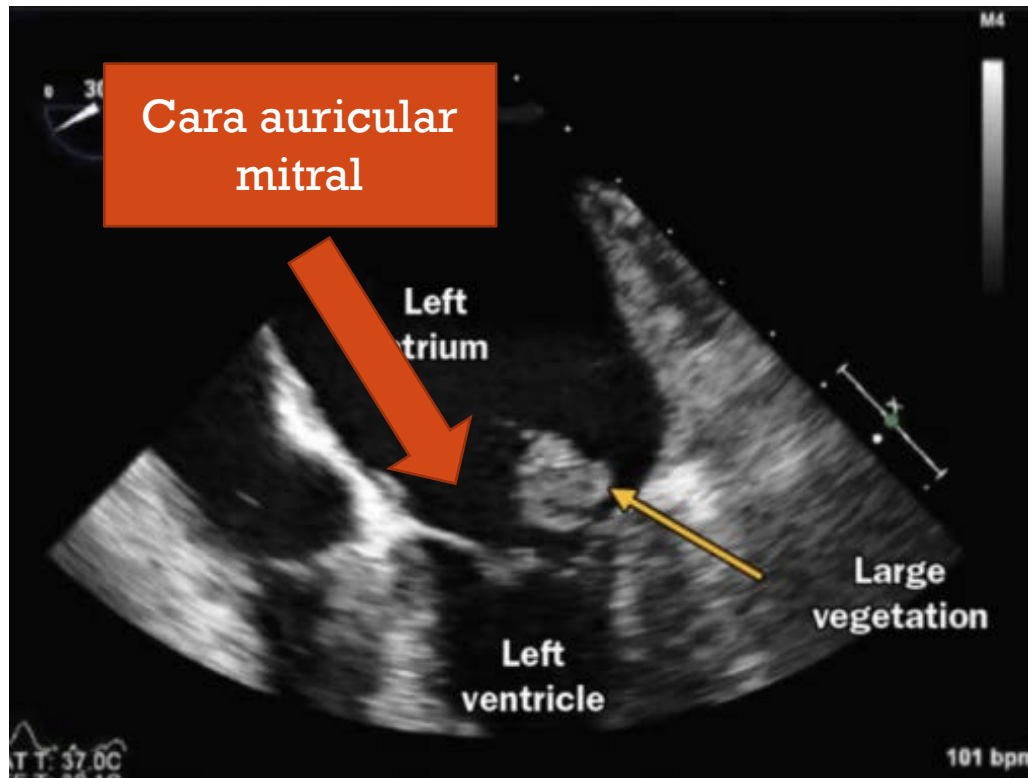
Pathogenesis of Infective Endocarditis



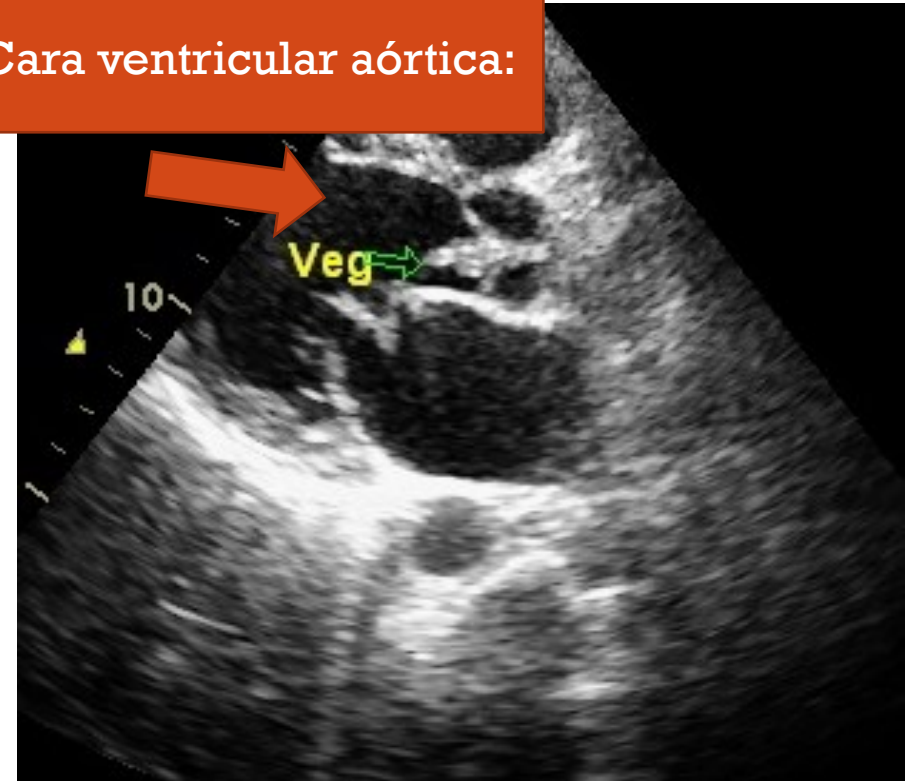
FISIOPATOLOGÍA: LO GENERAL

- La erosión endotelial se genera en zonas de mayor estrés:
 - Mitral auricular
 - Aórtica ventricular
- Sobrecrecimiento bacteriano lleva a **destrucción elastina/colágeno**
 - Inflamación
 - Inmunomodulación
 - Invasión

UBICACIÓN VEGETACIONES: ZONAS DE “ESTRÉS” ENDOTELIAL



Cara ventricular aórtica:



También válido para: CIV, Ductus, prótesis





DIAGNÓSTICO

MÁS QUE SABERSE LOS CRITERIOS... **¡HAY QUE SOSPECHARLO!**



DIAGNÓSTICO

- **Criterios de Duke Modificados (2000)**
 - Sensibilidad 80% en series (retrospectivo)
 - Baja sensibilidad en la práctica (diagnóstico tardío)
 - Diseñado para estudio, no score clínico
 - Bajo rendimiento en prótesis y dispositivos
 - Menor rendimiento de EcoTT sensibilidad 50-70%

Table 13 Definition of infective endocarditis according to the modified Duke criteria (adapted from Li et al.⁸⁷)

Definite IE
Pathological criteria • Microorganisms demonstrated by culture or on histological examination of a vegetation, a vegetation that has embolized, or an intracardiac abscess specimen; or • Pathological lesions; vegetation or intracardiac abscess confirmed by histological examination showing active endocarditis Clinical criteria • 2 major criteria; or • 1 major criterion and 3 minor criteria; or • 5 minor criteria
Possible IE
• 1 major criterion and 1 minor criterion; or • 3 minor criteria
Rejected IE
• Firm alternate diagnosis; or • Resolution of symptoms suggesting IE with antibiotic therapy for ≤ 4 days; or • No pathological evidence of IE at surgery or autopsy, with antibiotic therapy for ≤ 4 days; or • Does not meet criteria for possible IE, as above

Table 14 Definitions of the terms used in the European Society of Cardiology 2015 modified criteria for the diagnosis of infective endocarditis

Major criteria
1. Blood cultures positive for IE - Typical microorganisms consistent with IE from 2 separate blood cultures: • <i>Viridans streptococci</i>, <i>Streptococcus gallolyticus</i> (<i>Streptococcus bovis</i>), <i>HACEK</i> group, <i>Staphylococcus aureus</i>; or • Community-acquired enterococci, in the absence of a primary focus; or - Microorganisms consistent with IE from persistently positive blood cultures: • ≥ 2 positive blood cultures of blood samples drawn > 12 h apart; or • All of 3 or a majority of ≥ 4 separate cultures of blood (with first and last samples drawn ≥ 1 h apart); or - Single positive blood culture for <i>Coxiella burnetii</i> or phase I IgG antibody titre $> 1:800$
2. Imaging positive for IE - Echocardiogram positive for IE: • Vegetation; • Abscess, pseudoaneurysm, intracardiac fistula; • Valvular perforation or aneurysm; • New partial dehiscence of prosthetic valve. - Abnormal activity around the site of prosthetic valve implantation detected by ^{18}F-FDG PET/CT (only if the prosthesis was implanted for > 3 months) or radiolabelled leukocytes SPECT/CT. - Definite paravalvular lesions by cardiac CT.
Minor criteria
- Predisposition such as predisposing heart condition, or injection drug use. - Fever defined as temperature $> 38^\circ\text{C}$. - Vascular phenomena (including those detected by imaging only): major arterial emboli, septic pulmonary infarcts, infectious (mycotic) aneurysm, intracranial haemorrhage, conjunctival haemorrhages, and Janeway's lesions. - Immunological phenomena: glomerulonephritis, Osler's nodes, Roth's spots, and rheumatoid factor. - Microbiological evidence: positive blood culture but does not meet a major criterion as noted above or serological evidence of active infection with organism consistent with IE.



Major criteria

1. Blood cultures positive for IE

- a. Typical microorganisms consistent with IE from 2 separate blood cultures:
 - *Viridans streptococci*, *Streptococcus gallolyticus* (*Streptococcus bovis*), *HACEK* group, *Staphylococcus aureus*; or
 - Community-acquired enterococci, in the absence of a primary focus; or
- b. Microorganisms consistent with IE from persistently positive blood cultures:
 - ≥ 2 positive blood cultures of blood samples drawn >12 h apart; or
 - All of 3 or a majority of ≥ 4 separate cultures of blood (with first and last samples drawn ≥ 1 h apart); or
- c. Single positive blood culture for *Coxiella burnetii* or phase I IgG antibody titre $>1:800$

2. Imaging positive for IE

- a. Echocardiogram positive for IE:
 - Vegetation;
 - Abscess, pseudoaneurysm, intracardiac fistula;
 - Valvular perforation or aneurysm;
 - New partial dehiscence of prosthetic valve.
- b. Abnormal activity around the site of prosthetic valve implantation detected by ^{18}F -FDG PET/CT (only if the prosthesis was implanted for >3 months) or radiolabelled leukocytes SPECT/CT.
- c. Definite paravalvular lesions by cardiac CT.



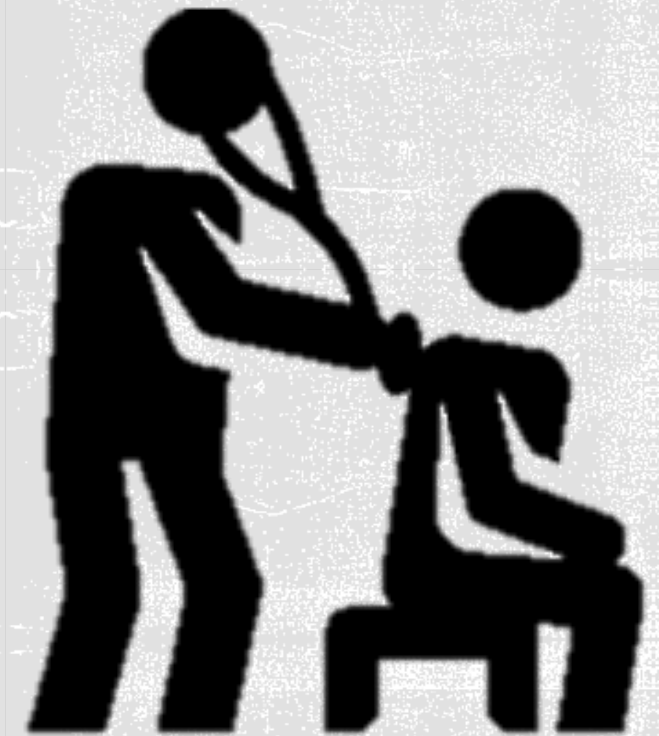
Minor criteria

1. Predisposition such as predisposing heart condition, or injection drug use.
2. Fever defined as temperature $>38^{\circ}\text{C}$.
3. Vascular phenomena (including those detected by imaging only): major arterial emboli, septic pulmonary infarcts, infectious (mycotic) aneurysm, intracranial haemorrhage, conjunctival haemorrhages, and Janeway's lesions.
4. Immunological phenomena: glomerulonephritis, Osler's nodes, Roth's spots, and rheumatoid factor.
5. Microbiological evidence: positive blood culture but does not meet a major criterion as noted above or serological evidence of active infection with organism consistent with IE.



Findings	Number (%)
Fever >38°C	2322/2428 (96)
Splinter hemorrhages	213/2655 (8)
Osler's nodes	77/2648 (3)
Janeway lesions	123/2650 (5)
Roth spots	50/2649 (2)
Vascular embolic event	456/2665 (17)
Conjunctival hemorrhage	122/2655 (5)
Splenomegaly	284/2662 (11)
New murmur	1068/2232 (48)
Worsening of old murmur	359/1787 (20)
Elevated erythrocyte sedimentation rate	1611/2645 (61)
Elevated C-reactive protein	1632/2650 (62)
Elevated rheumatoid factor	138/2549 (5)
Hematuria	666/2587 (26)

CLÍNICA



Petechiae in infective endocarditis



Petechiae (nonblanching, pinpoint reddish brown macules) are present on the toe in this patient with subacute bacterial endocarditis.

Splinter hemorrhages in infective endocarditis



Splinter hemorrhages, linear reddish-brown lesions, are seen in the nail bed of this patient with bacterial endocarditis due to group B *Streptococcus*.

Janeway lesion in infective endocarditis



A Janeway lesion (arrow) occurred on the palm in this patient with bacterial endocarditis due to *Streptococcus bovis*. These lesions are macular, nonpainful, and erythematous; they are located on the palms and soles.

Osler nodes in infective endocarditis



Osler nodes are tender papulopustules located on the pulp of the finger in a patient with bacterial endocarditis caused by *Staphylococcus aureus*.



HEMOCULTIVOS

Microbiology

Positive blood culture is the cornerstone of microbiological diagnosis. Three sets of blood cultures detect 96–98% of bacteraemia and samples should always be taken for culture before patients start antibiotics.^{57,58}

Bacteraemia in infective endocarditis is continuous, so cultures do not need to be timed with peaks of fever.

- Base del diagnóstico
- 3 set (6 frascos)
- Antes de los antibióticos
- No esperar peak febril

* Repetir a los 3-4 días de tratamiento para certificar resolución bacteremia



MICROORGANISMOS TÍPICOS (80-90%)



STAFILO AUREUS



STREPTOCOCCUS VIRIDANS Y EX-
HAEMOLYTICUS (GALLOLYTICUS)



ENTEROCOCCUS



MICROBIOLOGÍA

- Nativa (“típicos”)
- S aureus
- Strepto
- Enterococo
- HACEK

Protésica > 12 meses

- S aureus
- Strepto
- Enterococo
- HACEK

Protésica < 2 meses

- S coagulasa (-)
- S aureus MR
- Candida
- Gram (-)



MICROBIOLOGÍA: NOMENCLATURA

- VIRIDANS

- *Streptococcus mutans*, *Streptococcus salivarius*, *Streptococcus anginosus*, *Streptococcus mitis*, and *Streptococcus sanguinis*.

- HACEK

- *Haemophilus*, *Aggregatibacter*, *Cardiobacterium*, *Eikenella corrodens*, *Kingella*

- Consecuencias de Zoonosis

- *Coxiella burnetii* and *Brucella* (ganado), *Bartonella henselae* (gatos), and *Chlamydia psittaci* (aves).



Pathogen	Diagnostic procedures
<i>Brucella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Coxiella burnetii</i>	Serology (IgG phase I > 1:800), tissue culture, immunohistology, and PCR of surgical material.
<i>Bartonella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Tropheryma whipplei</i>	Histology and PCR of surgical material.
<i>Mycoplasma spp.</i>	Serology, culture, immunohistology, and PCR of surgical material.
<i>Legionella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Fungi</i>	Blood cultures, serology, PCR of surgical material.

**HEMOCULTIVOS
NEGATIVOS**



miércoles 24 enero de 2018 | Publicado a las 00:34 · Actualizado a las 05:04

Confirman 32 casos de Fiebre Q en la región de Los Lagos: 29 corresponden a Osorno

Publicado por: [Maximiliano Ortiz](#) La información es de: [Eduardo Palacios](#)



#OSORNO



ECG

- Hallazgos inespecíficos o normal inicialmente
- Importante en **detectar complicaciones**
 - Bloqueo AV 1er grado o bloqueo de rama
 - Sugiere extensión paravalvular o intramiocárdica



ECOCARDIOGRAMA: INDICACIONES

ETT:

- Precozmente ante sospecha de EI
- Bacteremia por *S. aureus* (caso a caso)

ETE:

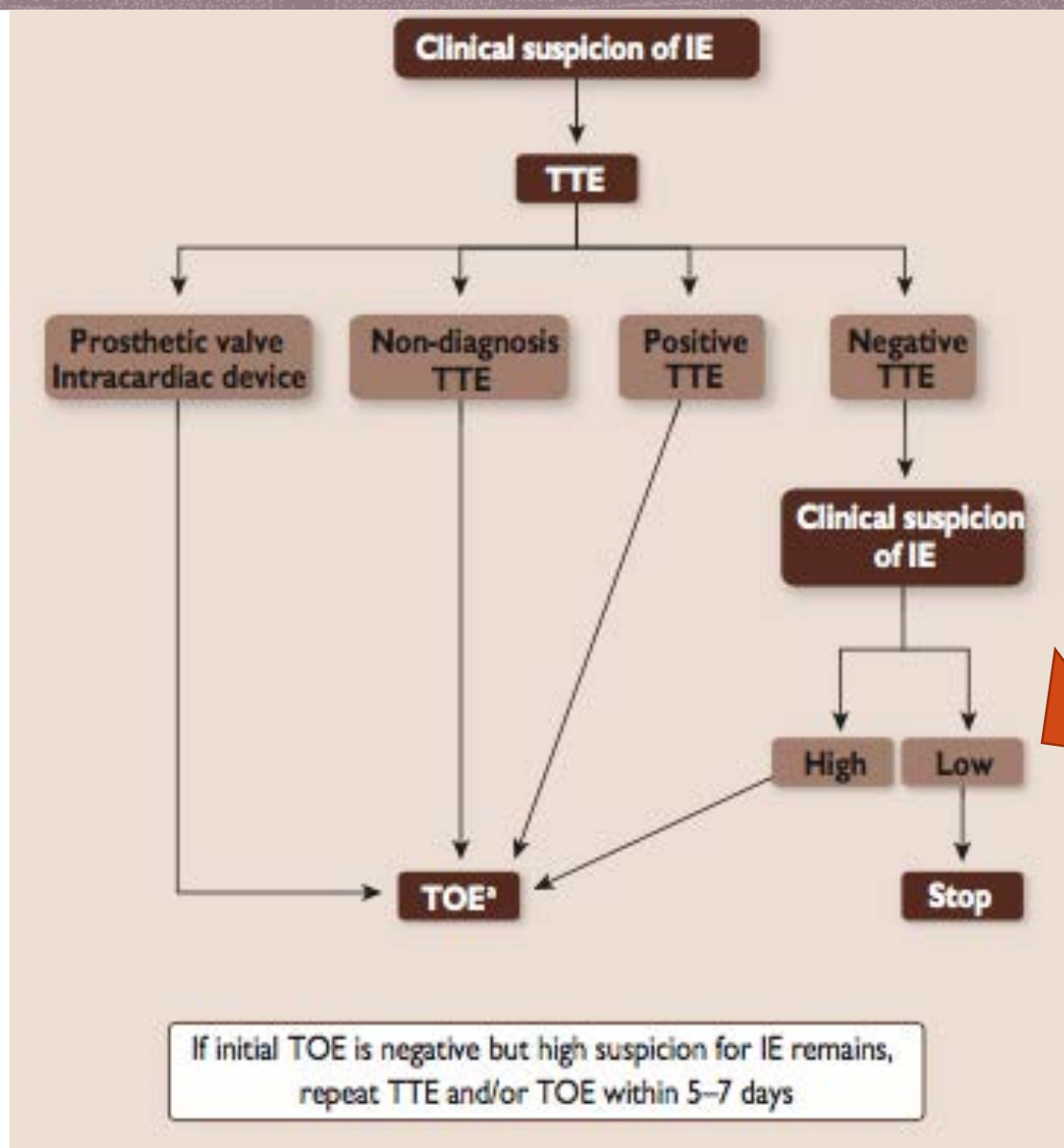
- ETT negativo y alta sospecha
- ETT positivo para evaluar complicaciones
- Válvula protésica o dispositivo

Repetir ETT/ETE en 5 días si sospecha alta

Table 10 Role of echocardiography in infective endocarditis

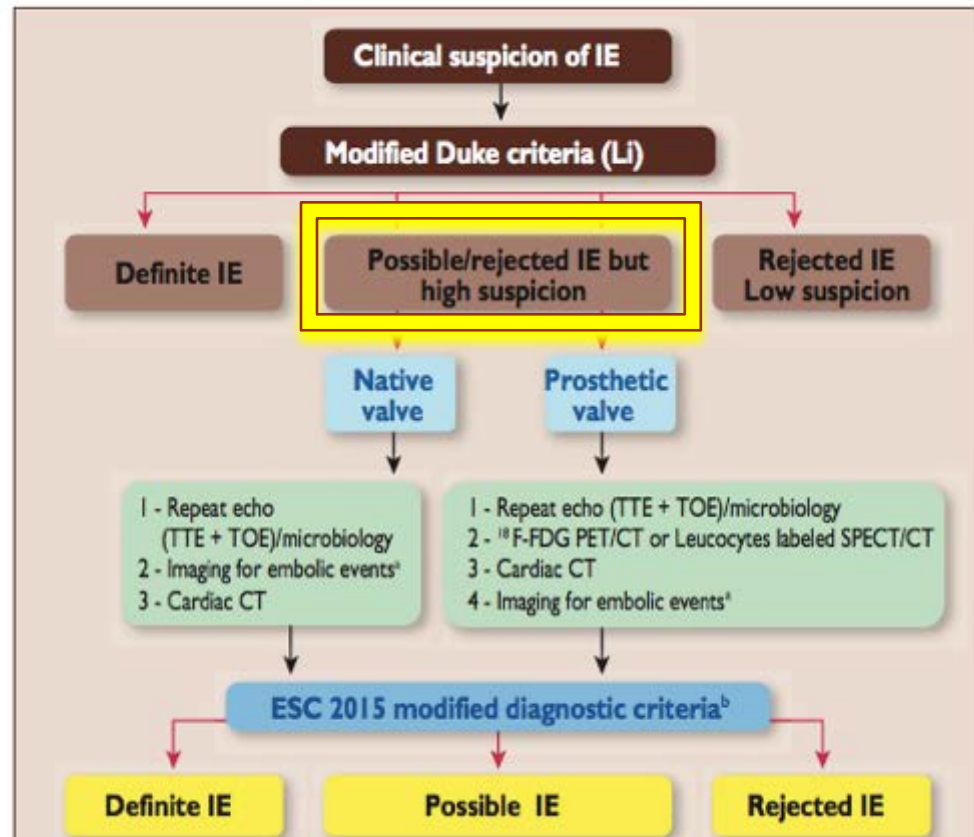
Recommendations	Class ^a	Level ^b	Ref. ^c
A. Diagnosis			
• TTE is recommended as the first-line imaging modality in suspected IE.	I	B	64,65
• TOE is recommended in all patients with clinical suspicion of IE and a negative or non-diagnostic TTE.	I	B	64, 68–71
• TOE is recommended in patients with clinical suspicion of IE, when a prosthetic heart valve or an intracardiac device is present.	I	B	64,71
• Repeat TTE and /or TOE within 5–7 days is recommended in case of initially negative examination when clinical suspicion of IE remains high.	I	C	
• Echocardiography should be considered in <i>Staphylococcus aureus</i> bacteraemia.	IIa	B	66,67
• TOE should be considered in patients with suspected IE, even in cases with positive TTE, except in isolated right-sided native valve IE with good quality TTE examination and unequivocal echocardiographic findings.	IIa	C	





En la mayoría basta un buen EcoT^T

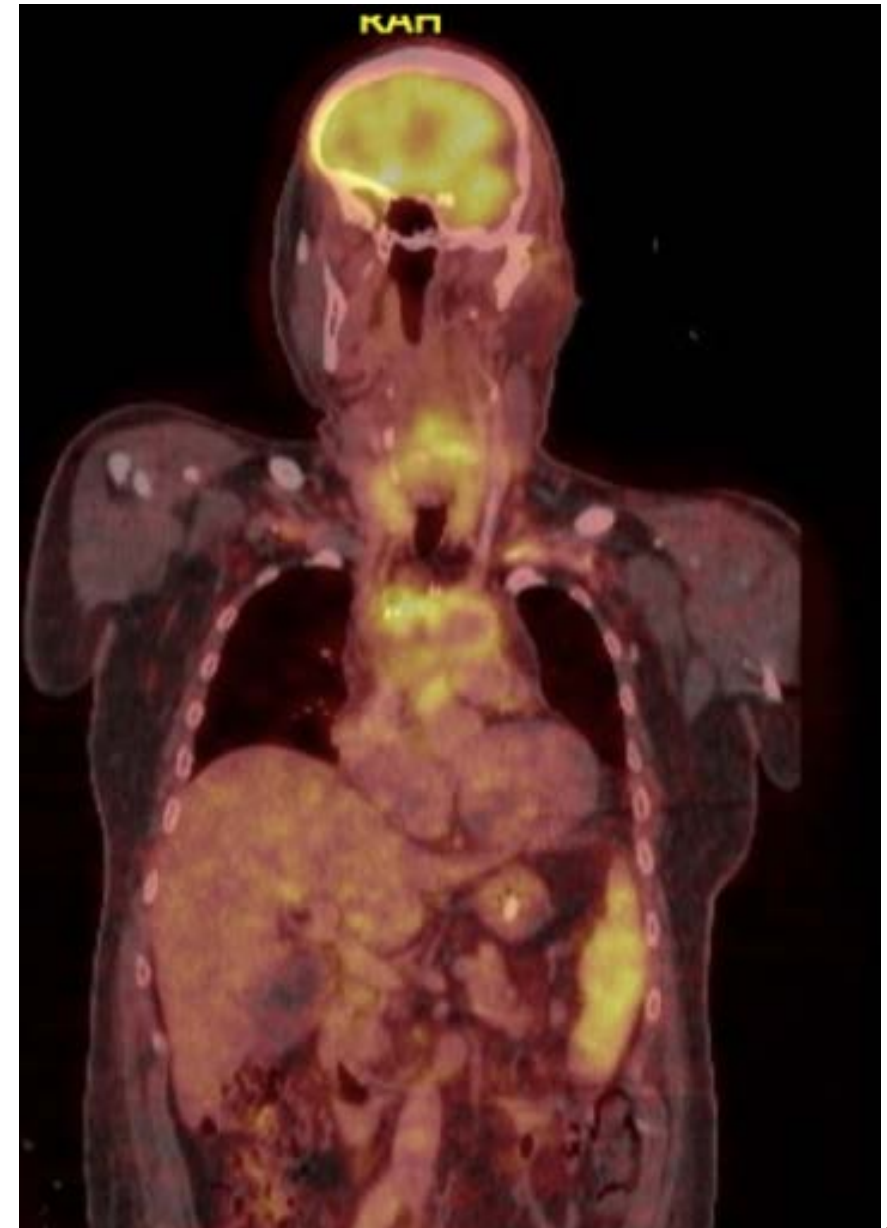
ENDOCARDITIS “POSSIBLE”



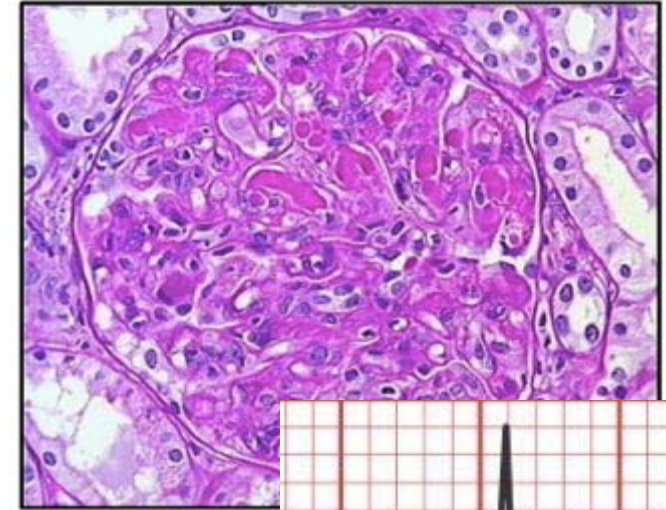
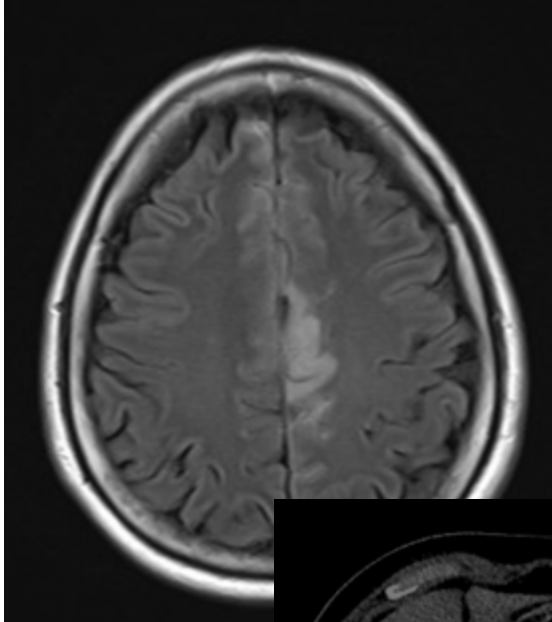
CT = computed tomography; FDG = fluorodeoxyglucose; IE = infective endocarditis;
 PET = positron emission tomography; SPECT = single photon emission computerized tomography;
 TOE = transoesophageal echocardiography; TTE = transthoracic echocardiography.

^aMay include cerebral MRI, whole body CT, and/or PET/CT.

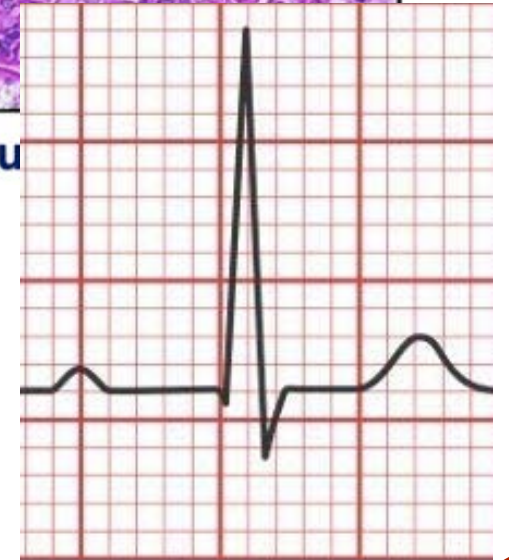
^bSee Table 14.



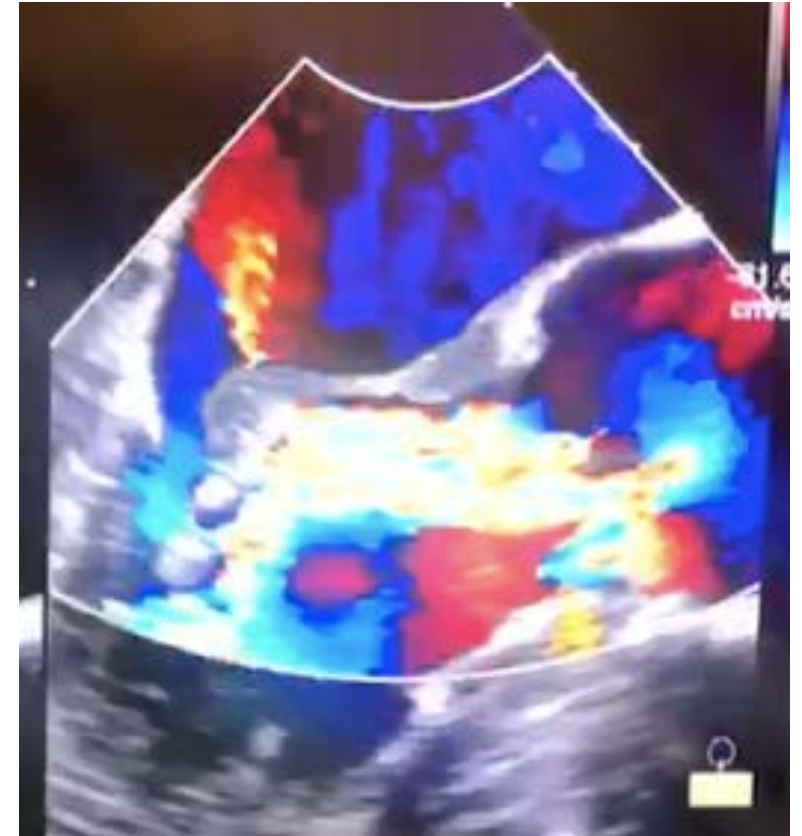
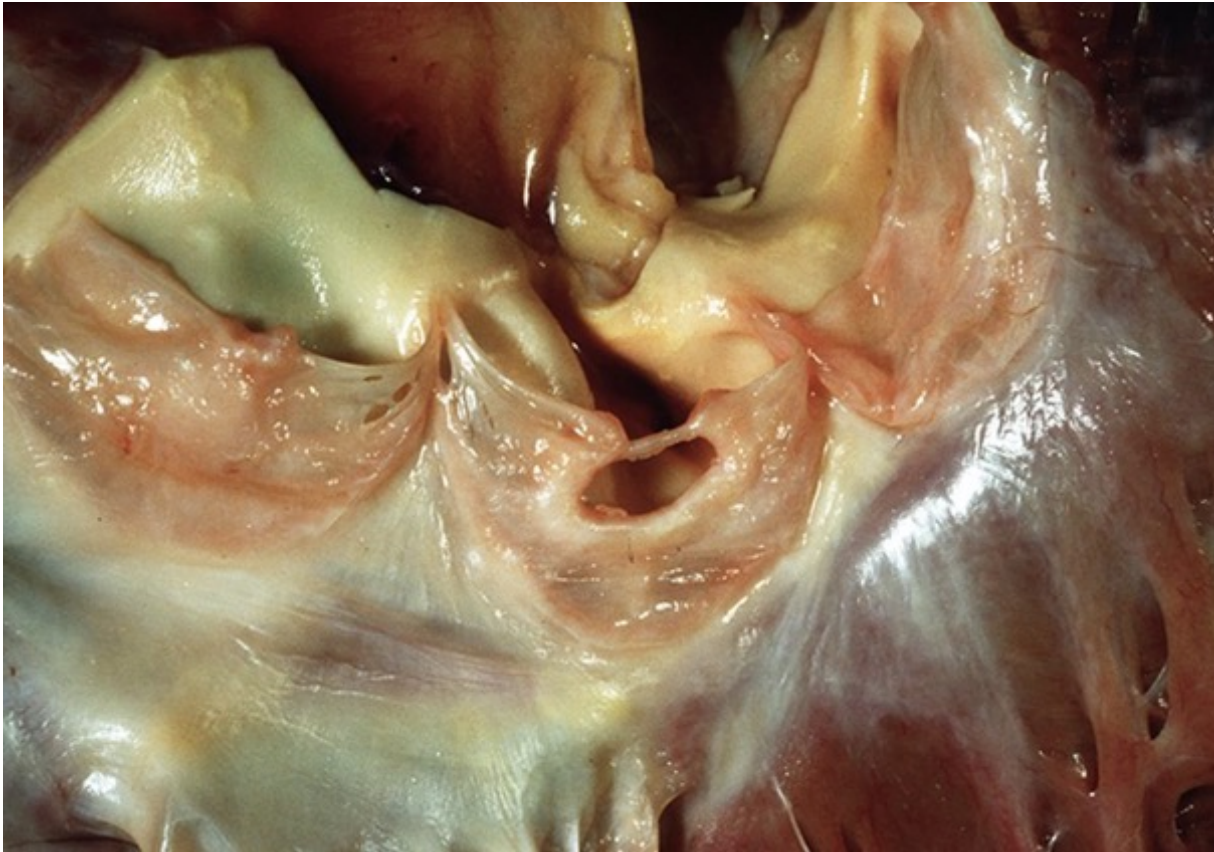
COMPLICACIONES: 50% DE LOS CASOS



Glomeru



PERFORACIÓN VELO AÓRTICO





TRATAMIENTO: EN EQUIPO

Table 8 Characteristics of the 'Endocarditis Team'

When to refer a patient with IE to an 'Endocarditis Team' in a reference centre

1. Patients with complicated IE (i.e. endocarditis with HF, abscess, or embolic or neurological complication or CHD), should be referred early and managed in a reference centre with immediate surgical facilities.
2. Patients with non-complicated IE can be initially managed in a non-reference centre, but with regular communication with the reference centre, consultations with the multidisciplinary 'Endocarditis Team', and, when needed, with external visit to the reference centre.

Buscar
complicaciones:
derivación
oportuna

50% terminará
en cirugía!





ANTIBIÓTICOS





ANTIBIÓTICOS: TRATAMIENTO EMPÍRICO

1. Posterior a toma cultivos
2. Debe cubrir: stafilo, strepto y enterococo
3. Nativa vs protésica (precoz o tardía)
4. Probabilidad de germen resistente
 - Antibióticos previamente
 - Intrahospitalario

ANTIBIÓTICOS EMPÍRICOS

Alérgicos PNC →

Antibiotic	Dosage and route	Class ^b
Nativa o prótesis tardía		
Ampicillin with (Flu)cloxacillin or oxacillin with Gentamicin ^d	12 g/day i.v. in 4–6 doses 12 g/day i.v. in 4–6 doses 3 mg/kg/day i.v. or i.m. in 1 dose	Ila
Vancomycin ^d with Gentamicin ^d	30–60 mg/kg/day i.v. in 2–3 doses 3 mg/kg/day i.v. or i.m. in 1 dose	IIb
Nosocomial o prótesis reciente		
Vancomycin ^d with Gentamicin ^d with Rifampin	30 mg/kg/day i.v. in 2 doses 3 mg/kg/day i.v. or i.m. in 1 dose 900–1200 mg i.v. or orally in 2 or 3 divided doses	IIb

Sin RCT al respecto

Ajustar con
cultivos



ANTIBIÓTICOS: GENERALIDADES

- Preferir antibióticos **BACTERICIDA**
- Acción **SINÉRGICA**:
 - Aminoglicósidos + inhibidor de formación de pared (betalactámico o glicopéptido)
- **TOLERANCIA**:
 - Tratamiento prolongado (> 6 semanas)
 - Uso rifampicina*
- **DURACIÓN**:
 - Varía desde 4 semanas a indefinido
 - Contar desde primer hemocultivo negativo o cultivo tejido positivo



INDICACIONES CIRUGÍA (50% TERMINA OPERADO)



INSUFICIENCIA
CARDIACA



INFECCIÓN NO
CONTROLADA



RIESGO
EMBÓLICO



Indications for surgery	Timing ^a	Class ^b	Level ^c	Ref. ^d
1. Heart failure				
Aortic or mitral NVE or PVE with severe acute regurgitation, obstruction or fistula causing refractory pulmonary oedema or cardiogenic shock	Emergency	I	B	111,115, 213,216
Aortic or mitral NVE or PVE with severe regurgitation or obstruction causing symptoms of HF or echocardiographic signs of poor haemodynamic tolerance	Urgent	I	B	37,115, 209,216, 220,221
2. Uncontrolled infection				
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B	37,209, 216
Infection caused by fungi or multiresistant organisms	Urgent/ elective	I	C	
Persisting positive blood cultures despite appropriate antibiotic therapy and adequate control of septic metastatic foci	Urgent	IIa	B	123
PVE caused by staphylococci or non-HACEK gram-negative bacteria	Urgent/ elective	IIa	C	
3. Prevention of embolism				
Aortic or mitral NVE or PVE with persistent vegetations >10 mm after one or more embolic episode despite appropriate antibiotic therapy	Urgent	I	B	9,58,72, 113,222
Aortic or mitral NVE with vegetations >10 mm, associated with severe valve stenosis or regurgitation, and low operative risk	Urgent	IIa	B	9
Aortic or mitral NVE or PVE with isolated very large vegetations (>30 mm)	Urgent	IIa	B	113
Aortic or mitral NVE or PVE with isolated large vegetations (>15 mm) and no other indication for surgery ^e	Urgent	IIb	C	



PROFILAXIS ANTIBIÓTICA

- Profilaxis antibiótica SOLO para procedimientos dentales (ESC)
 1. Prótesis valvular: incluye mecánicas, biológicas, TAVI, homoinjerto. Mayor tasa complicación
 2. Endocarditis previa: riesgo recidiva y mayor mortalidad
 3. Congénitos cianóticos o reparación paliativa con material protésico (Ej conductos)
 - Congénitos con reparación “total” (sin defecto) por 6 meses... hasta endotelización.
- AHA agrega trasplantados cardíacos con valvulopatía



PREVENCIÓN

- Grupos riesgo intermedio (generalidades)
 - Valvulopatías nativas:
 - Bicuspide
 - Prolapso mitral
 - Estenosis aórtica

Table 4 Non-specific prevention measures to be followed in high-risk and intermediate-risk patients

These measures should ideally be applied to the general population and particularly reinforced in high-risk patients:

- Strict dental and cutaneous hygiene. Dental follow-up should be performed twice a year in high-risk patients and yearly in the others.
- Disinfection of wounds.
- Eradication or decrease of chronic bacterial carriage: skin, urine.
- Curative antibiotics for any focus of bacterial infection.
- No self-medication with antibiotics.
- Strict infection control measures for any at-risk procedure.
- Discourage piercing and tattooing.
- Limit the use of infusion catheters and invasive procedure when possible. Favour peripheral over central catheters, and systematic replacement of the peripheral catheter every 3–4 days. Strict adherence to care bundles for central and peripheral cannulae should be performed.

Control odontológico cada 6-12 meses

Evitar infecciones: heridas

Infección = Atb

Ojo tatuaje y piercing

Evitar procedimientos invasivos Ej CVC





PRONÓSTICO



Table 15 Predictors of poor outcome in patients with infective endocarditis

Patient characteristics

- Older age
- Prosthetic valve IE
- Diabetes mellitus
- Comorbidity (e.g., frailty, immunosuppression, renal or pulmonary disease)

Clinical complications of IE

- Heart failure
- Renal failure
- >Moderate area of ischaemic stroke
- Brain haemorrhage
- Septic shock

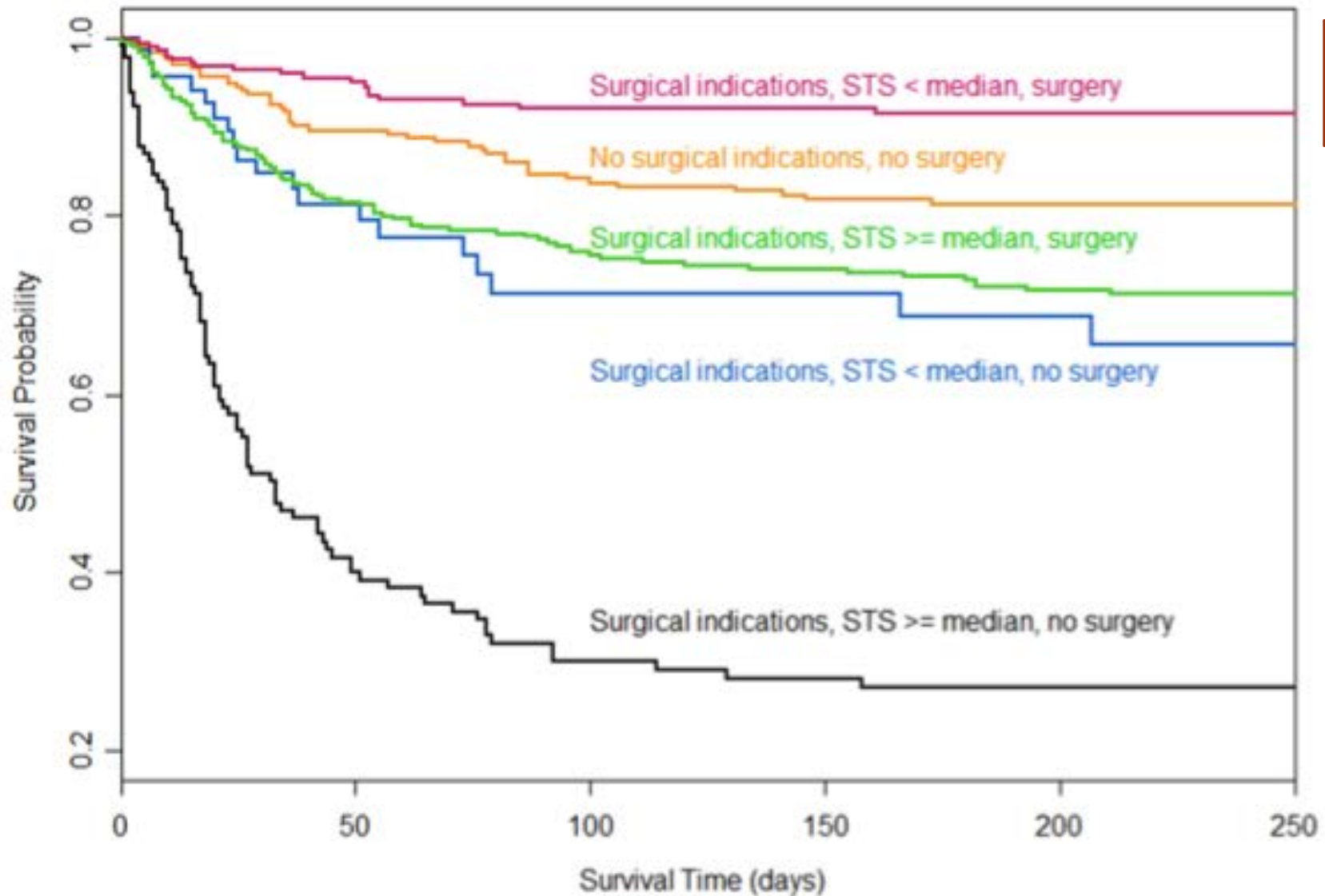
Microorganism

- *Staphylococcus aureus*
- Fungi
- Non-HACEK Gram-negative bacilli

Echocardiographic findings

- Periannular complications
- Severe left-sided valve regurgitation
- Low left ventricular ejection fraction
- Pulmonary hypertension
- Large vegetations
- Severe prosthetic valve dysfunction
- Premature mitral valve closure and other signs of elevated diastolic pressures





Con indicación de
cirugía y SI se opera

Con indicación de
cirugía y NO se opera



CONCLUSIONES

- PRESENTACIÓN EN EXTREMO VARIADA → verdadera “gran simuladora”
- ALTA SOSPECHA CLÍNICA → Ecocardiograma
 - Fiebre prolongada
 - Fiebre más cirugía cardíaca
 - Bacteremia por *S. aureus*
 - Recordar 40% sin cardiopatía previa
- Hemocultivos antes de los antibióticos
 - 3 set = 6 frascos
- Buscar complicaciones
 - Derivación precoz a centro de referencia (cardiología)
- Antibiótico prolongado: ajustar según microorganismo



FIN



Sociedad Médica de Santiago
Sociedad Chilena de Medicina Interna
150 años al Servicio de la Medicina

IX CURSO MEDICINA INTERNA HOSPITALARIA 2019

Endocarditis Infecciosa

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