A propos d'un cas d'endocardite

F. Roblot

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Cours d'Automne 2023

Déclaration des liens d'intérêts 2018 - 2023

- Intervenante au titre d'orateur

GSK vaccins, MSD, Moderna, Novartis, Pfizer, Sanofi, ViiVhealth Care

- Participation à des groupes de travail

Gilead, GSK, Janssen, Mundipharma

- Invitation congrès/journées scientifiques

Eumedica, Novartis, Pfizer, Sanofi

- Vice-présidente de la SPILF
- Vice-présidente du Conseil National Professionnel des maladies infectieuses et tropicales
- Vice-présidente de la Cs MIME du HCSP

Cas clinique (1)

- Femme de 70 ans, Guyane
- ATCD : HTA, abcès de cornée à pneumocoque post cataracte (2020)
- Admission 08/2023 : fièvre depuis 48H + dyspnée + épigastralgies + vomissement
- Ex clinique initial : 40,6°C, FR 18/mn, FC 99/mn sans souffle perçu (?), pas de foyer de crépitants, douleur HCD
- Sat O2 98% AA

Cas clinique (2)

- Biologie :
  - NFS : leucocytes 16 000/mm3 dont 85% PNN; plaquettes 168 000 /mm3 et Hb 12,6 g /dl
  - ASAT 143 UI/l (N<35), ALAT 208 UI/l,
  - Gamma GT 180 UI/l (N< 50); Ph alcalines 120 UI/L, bili totale 20 mmol/l
  - CRP 170 mg/l, clairance créat 97 ml/mn (MDRD)
  - 4 hémocultures positives à *S. pneumoniae*

Bilan complémentaire ?

Cas clinique (3)

- Sérologies VIH, VHB, VHC, HTLV1 négatives
- EPP normale
- Dosage pondéral des Ig : IgM < 0,20 g/l
- Immunophénotypage lymphocytaire normal
- RxP normale
- Echograhie abdominale normale

Cas clinique (4)

- ETT à J4 :

- Hypertrophie septale globale, FEVG préservée (77 %)
- fuite mitrale modérée, par dysfonction du feuillet postérieur;
- **image mobile suspecte de végétation** dans le contexte, appendue à la face auriculaire de l'anneau mitral postérieur (12 X 2.5 mm)
- OG dilatée (44 ml/m²)

Endocardite à pneumocoque ?

- Possible car fréquence = 10% des IE sur valve native ?
- Peu probable car pas de FRD d'infection invasive à pneumocoque ?
- Peu probable car pas de valve prothétique ?
- Peu probable car pas de foyer de pneumonie ?

Endocardite à pneumocoque

- < 2% des EI (Selton-Sury C et al, CID 2012)
- 0,86% cohorte 111 cas (de Egea V et al, Medicine 2015)
- (15% des EI avant 1980)

- 0.3% des infections à pneumocoque

(Marrie TJ et al, Eur J Clin Microbiol Infect Dis 2018)

Table 3. Distribution of Causative Microorganisms in Patients With Infective Endocarditis

Microorganisms	No. (%) of Patients (n = 497)	
Streptococcaceae	240	(48.3)
Streptococci	180	(36.2)
Oral streptococci[a]	93	(18.7)
Group D streptococci[b]	62	(12.5)
Pyogenic streptococci	25	(5.0)
Enterococci	52	(10.5)
Other Streptococcaceae[c]	8	(1.6)
Staphylococcaceae	180	(36.2)
Staphylococcus aureus	132	(26.6)
Coagulase-negative staphylococci	48	(9.7)
Other microorganisms[d]	42	(8.5)
HACEK group	6	…
Enterobacteriaceae	4	…
Propionibacterium acnes	4	…
Pseudomonas aeruginosa	3	…
Lactobacillus species	2	…
Corynebacterium species	2	…
Coxiella burnetii	2	…
Bartonella quintana	1	…
Tropheryma whipplei	1	…
Candida species	6	…
Miscellaneous[e]	11	…
≥2 Microorganisms[f]	9	(1.8)
No microorganism identified	26	(5.2)

Clinique

Demographic and clinical characteristics of 50 patients with definite pneumococcal endocarditis.

Characteristics[a]	N = 50
Baseline	
Age at diagnosis (years), mean ± SD	60 ± 14
Male gender	38 (76)
Clinical and biological manifestations	
Fever	
Vascular phenomena[b]	
Immunological phenomena[c]	
Pneumonia	
Meningitis	
Arthritis	
Ocular infection	
Other infectious localizations[d]	
Blood cultures positive for *S. pneumoniae*	
Positive histopathological examination and/or c	
Affected valve	
Native	
Prosthesis	
Mitral	
Aortic	
Tricuspid	
Transthoracic echocardiographic findings	
TTE positive for IE	50 (100)
Vegetations	44 (88)
Abscess	14 (30)
Valve regurgitation	38 (79)
Dehiscence of prosthesis	0

Âge
Localisations associées +++
Pneumonie
Méningite
Arthrite

Valve native (93,7%), aorte (53,2%)

TABLE 2. Demographic and Clinical Characteristics of 111 Patients With *Streptococcus pneumoniae* Endocarditis

Characteristics	Total Cohort N = 111 (%)	Spanish Cohort n = 24	Literature Review n = 87
Age (median, IQR)	51 (26–63)	57 (50–69)	47 (15–61)
Sex			
Male	71 (64)	18 (75)	53 (60.9)
Congenital heart disease	11 (9.9)	0 (0)	11 (12.9)
		6 (27.3)	2 (2.4)
		1 (4.2)	5 (6.4)
		21 (87.5)	58/61 (95,1)
		17 (77.3)	44/55 (80.0)
		9 (37.5)	42/84 (50.0)
		7 (29.2)	38/84 (45.2)
		3 (12.5)	26/84 (31.0)
		0 (0)	5/62 (8.1)
		3 (13)	0 (0)
		20 (83.3)	84 (96.6)
		4 (16.7)	3 (3.4)
Aortic	59 (53.2)	14 (58.3)	45 (51.7)
Mitral	45 (40.5)	10 (41.7)	35 (40.2)
Tricuspid	14 (12.6)	3 (12.5)	11 (12.6)
More than 1 valve affected	15 (13.5)	3 (12.5)	12 (13.8)

(Périer A et al, Int J Cardiol 2019
de Egea V et al, Medicine 2015)

Facteurs de risque ?

- Endocardite à pneumocoque ?
- Etude multicentrique / 15 ans
- Âge 60 ± 14 ans, 38 H (76%)
  - 51 ans (IQR, 26-63), 71 H (64%)
- Peu de FDR EI
- 78% FDR infection à pneumocoque

(Périer A et al, Int J Cardiol 2019
de Egea V et al, Medicine 2015)

International Journal of Cardiology 288 (2019) 102–106

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International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

Prognosis of *Streptococcus pneumoniae* endocarditis in France, a multicenter observational study (2000–2015)☆

Amandine Périer [a,b], Mathieu Puyade [a,b], Matthieu Revest [c,d], Pierre Tattevin [c,d], Louis Bernard [e,f], Adrien Lemaignen [e,f], David Boutoille [g,h], Joseph Allal [a,i], France Roblot [a,j,k], Blandine Rammaert [a,j,k,*]

Table 1
Demographic and clinical characteristics of 50 patients with definite pneumococcal endocarditis.

Characteristics[a]	*N* = 50
Baseline	
Age at diagnosis (years), mean ± SD	60 ± 14
Male gender	38 (76)
IPD predisposing conditions	
Asplenia	2
>65 years	18 (36)
Chronic pulmonary disease	12 (24)
Repeated ENT infections	3
Cardiopathy	12 (24)
Alcoholism	17 (34)
Malignant blood disease	6
Renal failure	3
Kidney transplantation	1
IPD risk factors	
None	11 (22)
1	12 (24)
≥2	27 (54)
No vaccine uptake before IE	48 (96)
IE predisposing conditions	
Valvular prosthesis	5
Previous IE	1
Congenital cardiopathy	2
Valvular disease	10 (22)
Intravenous drug use	1
Pacemaker	4
IE risk factors	
None	38 (76)
1	6
≥2	6

Clinique et FDR ?

- 3251 adultes + IIP 2000-2014, Canada
- 28 EI (0.3%)
- UDIV
- Présentation clinique initiale + sévère (confusion mentale, USI; p<0,005)
- Souffle valvulaire nouveau 39.3% vs 2.2% si pas EI ($p < 0.001$)
- **Mortalité 39.3%** vs 14.7% IIP sans EI
- Pas de sérotype spécifique

(Marrie TJ et al, Eur J Clin Microbiol Infect Dis 2018)

Quel bilan pour Mme L… ?

- ETO ?
- IRM cérébrale ?
- TEP/TDM ?
- TDM abdominale ?

ESC European Society of Cardiology
European Heart Journal (2023) **44**, 3948–4042
https://doi.org/10.1093/eurheartj/ehad193

2023 ESC Guidelines for the management of endocarditis

- ETO si ETT contributive ?

Section 5. Recommendation Table 5 — Recommendations for the role of echocardiography in infective endocarditis		
TOE is recommended when the patient is stable before switching from intravenous to oral antibiotic therapy.	I	B

Recommendation Table 5 — Recommendations for the role of echocardiography in infective endocarditis

Recommendations	Class[a]	Level[b]
A. Diagnosis		
TTE is recommended as the first-line imaging modality in suspected IE.[166,179]	I	B
TOE is recommended in all patients with clinical suspicion of IE and a negative or non-diagnostic TTE.[166,178,179]	I	B
TOE is recommended in patients with clinical suspicion of IE, when a prosthetic heart valve or an intracardiac device is present.[166,178,179]	I	B
Repeating TTE and/or TOE within 5–7 days is recommended in cases of initially negative or inconclusive examination when clinical suspicion of IE remains high.[178]	I	C
TOE is recommended 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.[165,166,179]	I	C
Performing an echocardiography should be considered in *S. aureus*, *E. faecalis*, and some *Streptococcus* spp. bacteraemia.[19,149,174]	IIa	B

Intérêt ETO + ETT ?

European Journal of Echocardiography (2011) 12, 414–420
doi:10.1093/ejechocard/jer023

CLINICAL/ORIGINAL PAPERS

Prevalence of infective endocarditis in patients with *Staphylococcus aureus* bacteraemia: the value of screening with echocardiography

Rasmus V. Rasmussen[1*], Ulla Høst[2], Magnus Arpi[3], Christian Hassager[4], Helle K. Johansen[5], Eva Korup[6], Henrik C. Schønheyder[7], Jens Berning[8], Sabine Gill[9], Flemming S. Rosenvinge[10], Vance G. Fowler Jr[11], Jacob E. Møller[4], Robert L. Skov[12], Carsten T. Larsen[1], Thomas F. Hansen[1], Shan Mard[2], Jesper Smit[7], Paal S. Andersen[12], and Niels E. Bruun[1]

- 244 Bactériémies à *S. aureus*, 2009 – 2010
  - 53 EI certaines (22%)
  - Prévalence sur valve native 19%
  - Prévalence sur valve prothétique ou matériel intracardiaque 38%

- 92 patients ETT sans ETO
- 8 diagnostics d'EI sur ETT
- suivi à J30 : pas de nouveau diagnostic d'EI
- ETT de qualité « suffisante » dans un contexte où prévalence = 19%

Intérêt ETO + ETT ?

TABLE 3. Diagnostic Characteristics and Complications of 111 Patients With Pneumococal Endocarditis

Variable	Total Cohort N = 111	Spanish Cohort n = 24*	Literature Review n = 87*	*P*
Diagnostic characteristics				
Positive blood cultures	94 (84.7)	22 (91.7)	72/82 (87.8)*	0.7
Other positive cultures	66/90 (73.3)*	12 (57.1)	54/69 (78.3)*	0.08
CSF	30 (33.3)	5 (25.0)	17 (31.5)	
Heart valves	14 (21.2)	5 (41.7)	9 (16.7)	
Respiratory tract	11 (12.2)	1 (8.3)	3 (5.6)	
Synovial fluid	4 (6.1)	0 (0)	4 (7.4)	
Other	6 (9.1)	2 (16.7)	5 (9.3)	
Antimicrobial resistance				
Nonpenicillin susceptible	15/74 (20.3)*	1 (4.2)	14/54 (25.9)*	0.05
Noncefotaxime susceptible	3/36 (8.3)*	0 (0)	3/22 (13.6)*	0.2
Echocardiography	109 (98.2)	24 (100)	85 (97.7)	1
TTE only	27 (24.3)	6 (25.0)	21 (36.8)	
TEE only	20 (18.0)	1 (4.2)	19 (33.3)	
Both	32 (28.8)	17 (70.8)	15 (26.3)	
Technique not specified	30 (27%)	0 (0%)	32 (36.8%)	

(de Egea V et al, Medicine 2015)

Quel Bilan ?

- TDM cardiaque
- TEP/TDM si valve prothétique
- IRM et TDM TAP :
  - Patients symptomatiques
  - « Détection » si asymptomatique

Section 5. Recommendation Table 6 — Recommendations for the role of computed tomography, nuclear imaging, and magnetic resonance in infective endocarditis		
Cardiac CTA is recommended in patients with possible NVE to detect valvular lesions and confirm the diagnosis of IE.	I	B
[18F]FDG-PET/CT(A) and cardiac CTA are recommended in possible PVE to detect valvular lesions and confirm the diagnosis of IE.	I	B
[18F]FDG-PET/CT(A) may be considered in possible CIED-related IE to confirm the diagnosis of IE.	IIa	B
Cardiac CTA is recommended in NVE and PVE to diagnose paravalvular or periprosthetic complications if echocardiography is inconclusive.	I	B
Brain and whole-body imaging (CT, [18F]FDG-PET/CT, and/or MRI) are recommended in symptomatic patients with NVE and PVE to detect peripheral lesions or add minor diagnostic criteria.	I	B
WBC SPECT/CT should be considered in patients with high clinical suspicion of PVE when echocardiography is negative or inconclusive and when PET/CT is unavailable.	IIa	C
Brain and whole-body imaging (CT, [18F]FDG-PET/CT, and MRI) in NVE and PVE may be considered for screening of peripheral lesions in asymptomatic patients.	IIb	B

Quel bilan ?

Identifiants
30081953
253533

TEP
SIE POSITON POITOU - CHARENTES

SERVICE D'IMAGERIE MOLECULAIRE – TEP

TEP au 18 FDG

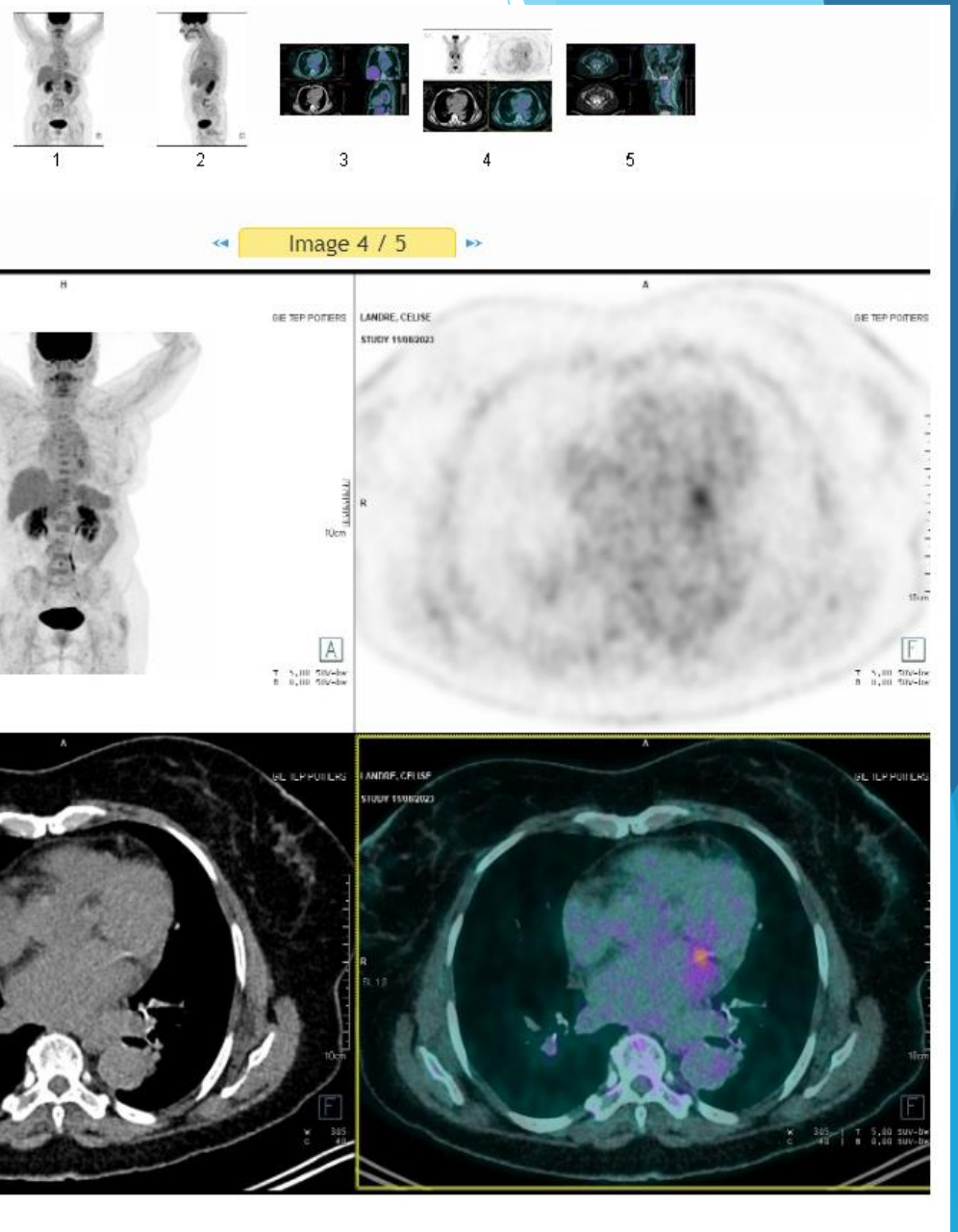
Indication :
Recherche de foyer infectieux profond.

Technique :
TEP VISION 450 (Siemens N°1011) du 04/10/2019 ; Archivage PACS ; Glycémie 0.90 g/l ; Poids 66.0 kg; Taille 160 cm. Injection IV de 148 MBq de 18-FDG.
Scanner : PDL = 508 mGy.cm Prescription d'un régime hypoglucidique.

Résultats :

Etage sus-diaphragmatique :
Pas d'hyperfixation suspecte de la sphère ORL, des glandes mammaires, des aires ganglionnaires cervicales, médiastinohilaires ou axillaires.
Un foyer modérément hypermétabolique à la partie supérieure de la valve mitrale, suspect d'endocardite.
Pas de nodule pulmonaire solide hypermétabolique. Un nodule calcifié non métabolique du lobe moyen, d'allure séquellaire.

Etage sous-diaphragmatique :
Pas d'hyperfixation suspecte hépatique, splénique, surrénalienne, rénale, pancréatique, des anses digestives ou des aires ganglionnaires abdominopelviennes.
Un foyer modérément hypermétabolique au contact d'une plaque calcifiée de la partie proximale de l'artère iliaque primitive gauche : plaque instable ? Greffe septique ?



Quel traitement ?

- Amoxicilline 100 mg/kg/j ?
- + Gentamicine 3 mg/kg pendant 2 semaines ?
- + Rifampicine pendant 2 semaines ?
- Ceftriaxone 2 G / j
- Durée totale ?
- Relais oral ?

Traitement ?

Table 2
Treatment and outcome of 50 patients with definite pneumococcal endocarditis.

	N = 50
Time from 1st symptoms onset to antibiotherapy, days (mean ± SD)	6.3 ± 6.9
Number of antibiotics, *n* (%)	
Monotherapy	7
Bitherapy	28 (56)
≥3 antibiotics	15 (30)
Antibiotic choice, *n* (%)	
3rd generation cephalosporin or amoxicillin or penicillin G or vancomycin	50 (100)
Gentamicin	39 (78)
Antibiotic duration (mean ± SD)	
Total antibiotherapy duration, weeks	5.5 ± 2.3
Beta-lactam or vancomycin duration, days	37 ± 14.7
Gentamicin duration, days	8.5 ± 8.4

Quel traitement ?

- Amoxicilline 100 mg/kg perfusion continue
- 6 semaines
- Relais oral ?
- 400 EI coeur gauche
- 10 j de TTT ATBT IV
  - 199 IV
  - 201 relais oral (bithérapie)
- Nombre de *S. pneumoniae* ?

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 JANUARY 31, 2019 VOL. 380 NO. 5

Partial Oral versus Intravenous Antibiotic Treatment of Endocarditis

Table 1. Characteristics of the Patients at Baseline.*

Characteristic	Intravenous Treatment (N=199)	Oral Treatment (N=201)
Mean age — yr	67.3±12.0	67.6±12.6
Female sex — no. (%)	50 (25.1)	42 (20.9)
Body temperature — °C	36.9±0.45	37.0±0.44
Coexisting condition or risk factor — no. (%)		
Diabetes	36 (18.1)	31 (15.4)
Renal failure	25 (12.6)	21 (10.4)
Dialysis	13 (6.5)	15 (7.5)
COPD	17 (8.5)	9 (4.5)
Liver disease	7 (3.5)	6 (3.0)
Cancer	14 (7.0)	18 (9.0)
Intravenous drug use	3 (1.5)	2 (1.0)
Pathogen — no. (%)†		
Streptococcus	104 (52.3)	92 (45.8)
Enterococcus faecalis	46 (23.1)	51 (25.4)
Staphylococcus aureus‡	40 (20.1)	47 (23.4)
Coagulase-negative staphylococci	10 (5.0)	13 (6.5)

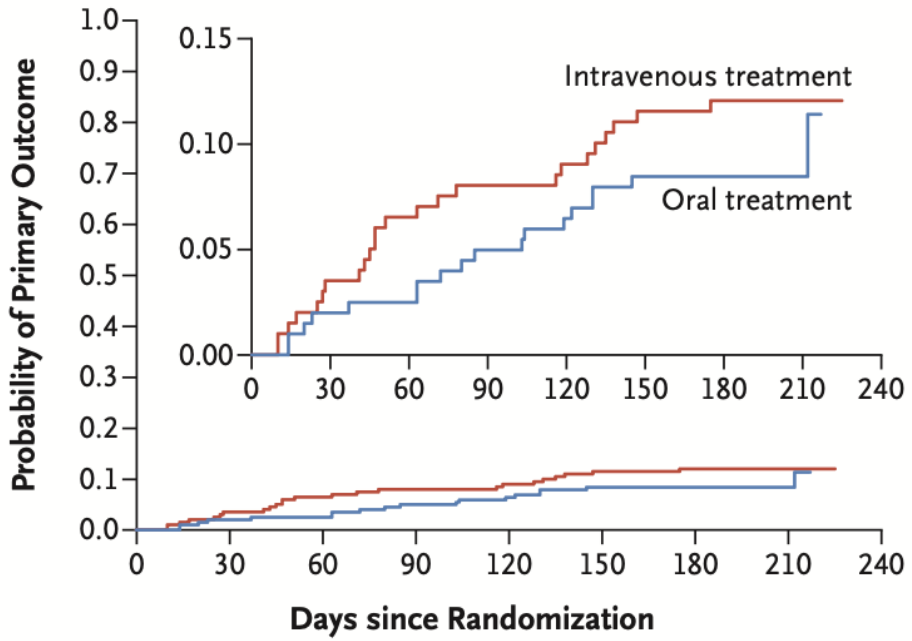
Quel traitement ?

- Pas de différence à 6 mois
  - Mortalité
  - Embols
  - Chirurgie cardiaque en urgence
  - Rechute de bactériémie

Table 2. Distribution of the Four Components of the Primary Composite Outcome.*

Component	Intravenous Treatment (N=199)	Oral Treatment (N=201)	Difference	Hazard Ratio (95% CI)
	number (percent)		*percentage points (95% CI)*	
All-cause mortality	13 (6.5)	7 (3.5)	3.0 (−1.4 to 7.7)	0.53 (0.21 to 1.32)
Unplanned cardiac surgery	6 (3.0)	6 (3.0)	0 (−3.3 to 3.4)	0.99 (0.32 to 3.07)
Embolic event	3 (1.5)	3 (1.5)	0 (−2.4 to 2.4)	0.97 (0.20 to 4.82)
Relapse of the positive blood culture†	5 (2.5)	5 (2.5)	0 (−3.1 to 3.1)	0.97 (0.28 to 3.33)

* Six patients, three in each group, had two outcomes.
† For details about relapse of the positive blood culture, see the Supplementary Appendix.



No. at Risk

Intravenous treatment	199	192	186	183	181	176	174	28	0
Oral treatment	201	197	196	191	188	184	183	36	0

Figure 2. Kaplan–Meier Plot of the Probability of the Primary Composite Outcome.

The primary composite outcome was all-cause mortality, unplanned cardiac surgery, embolic events, or relapse of bacteremia with the primary pathogen, from randomization until 6 months after antibiotic treatment was completed. The oral treatment group shifted from intravenously administered antibiotics to orally administered antibiotics at a median of 17 days after the start of treatment. The inset shows the same data on an enlarged y axis.

Et à 5 ans ?

Five-Year Outcomes of the Partial Oral Treatment of Endocarditis (POET) Trial

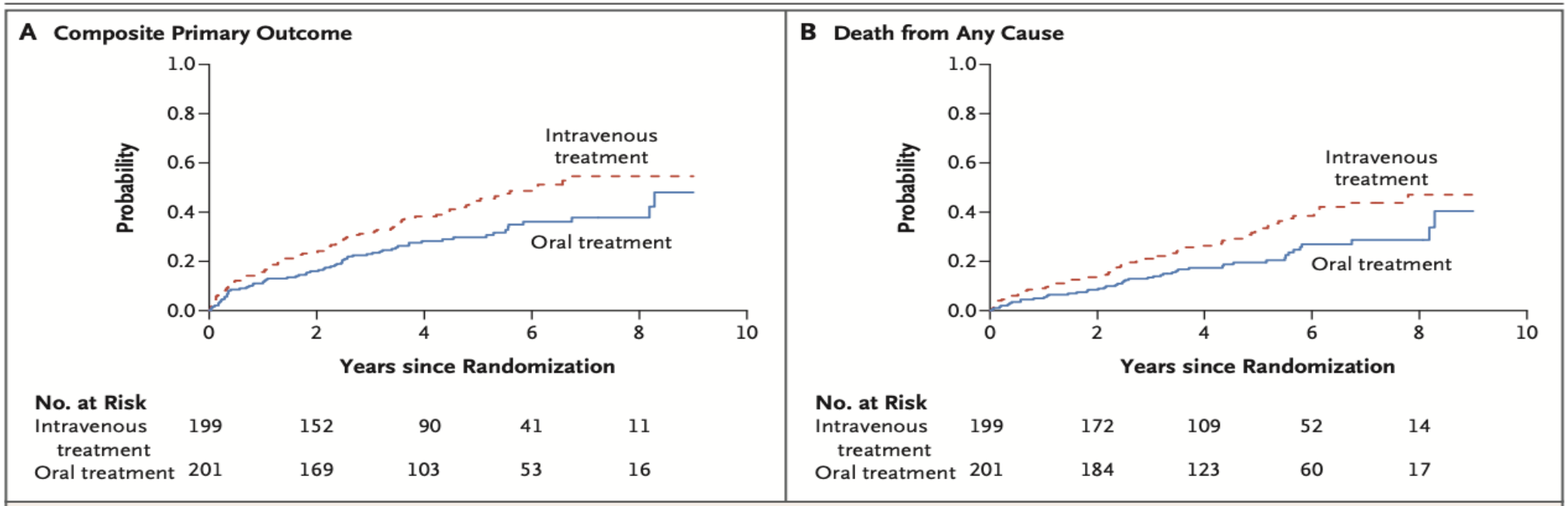


Figure 1. Cumulative Incidence of Events.

Shown are plots of the cumulative incidence of events from randomization to a median follow-up of 5.4 years. The patients assigned to the intravenous treatment group received intravenous antibiotic therapy for the entire treatment period, and the patients assigned to receive step-down treatment shifted from intravenous antibiotics to oral antibiotics after clinical stabilization was reached. The composite primary outcome consisted of death from any cause, unplanned cardiac surgery, embolic events, and relapse of a blood culture result positive for the primary pathogen.

(Pries-Hege MM N Eng J Med 2022)

Relais oral pour les endocardites à S. pneumoniae ?

Clinical Infectious Diseases
MAJOR ARTICLE

Attainment of Target Antibiotic Levels by Oral Treatment of Left-Sided Infective Endocarditis: A POET Substudy

- Analyse PK/PD, POET
- Amoxicilline per os 1 g/ 6h
- Probabilité d'atteindre la cible
  - BP (n=236) et / CMI (N=74)

Table 1. Clinical Breakpoints and Pharmacokinetic/Pharmacodynamic Targets

Drug	Dose	Approximate Unbound Fraction (%)	Bacterial Species	Clinical Breakpoint (mg/L)	Pharmacokinetic/ Pharmacodynamic Target
Amoxicillin	PO: 1000 mg q6 h	80	Enterococci	4	*f*T > BP or *f*T > MIC more than 50% of dosing interval[b]
			Staphylococci Streptococci	0.5[a]	
Dicloxacillin	PO: 1000 mg q6 h	3	Staphylococci	0.5[c]	*f*T >BP more than 50% of dosing interval[b]
	IV: 3000 mg q6 h				
Linezolid	PO or IV: 600 mg q12 h	Not used	Enterococci Staphylococci	4	AUC_{12}/BP >50 or AUC_{12}/MIC >50
			Streptococci	2[d]	
Moxifloxacin	PO or IV: 400 mg q24 h	50	Enterococci Streptococci	0.5[e]	$fAUC_{24}$/BP >30 or $fAUC_{24}$/MIC >30[b]
			Staphylococci	0.25	
Rifampicin[f]	PO: 600 mg q12 h	Not used	Staphylococci Streptococci	0.064	AUC_{12}/BP >500 or AUC_{12}/MIC >500

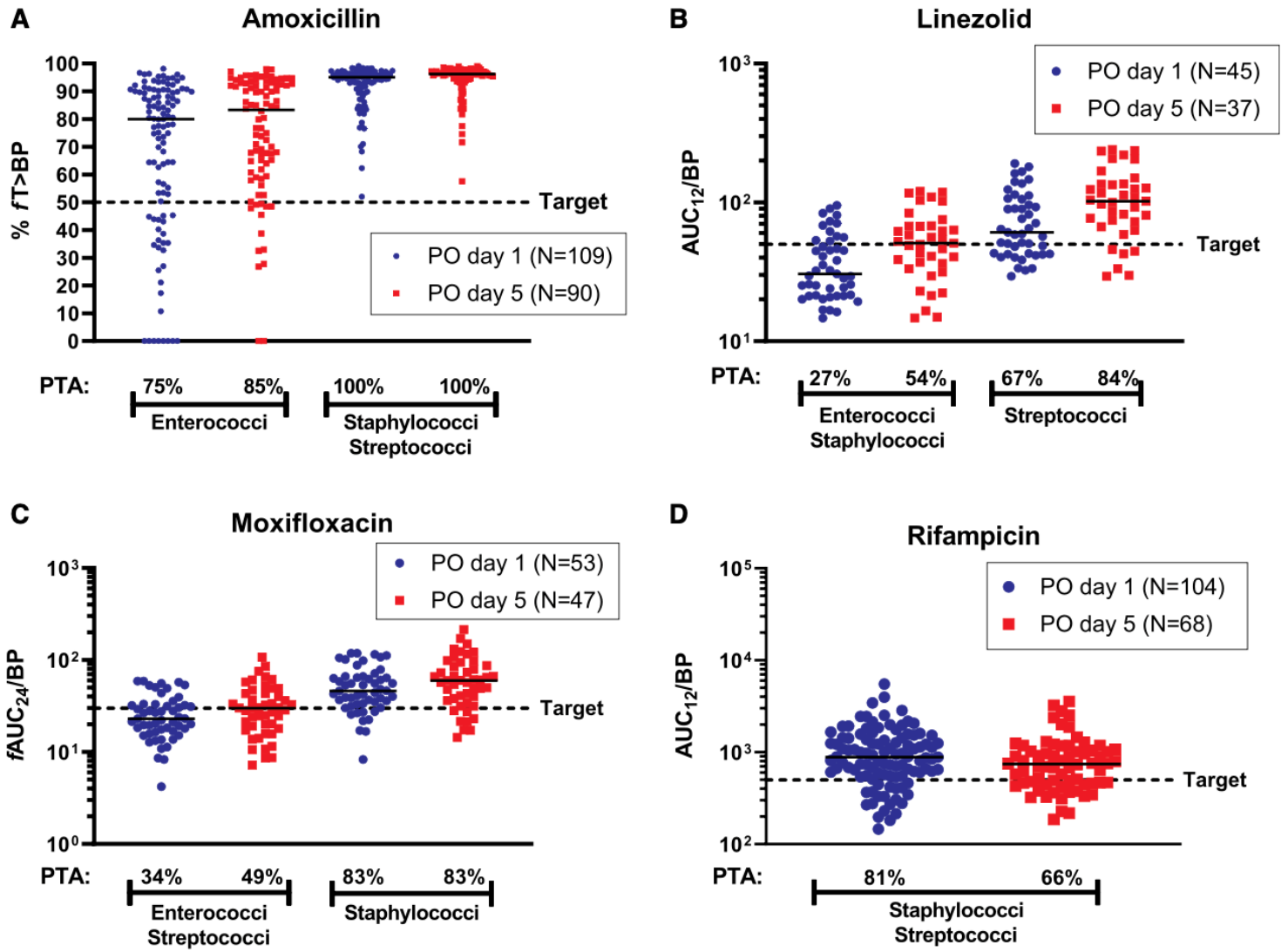
(Bock M et al Clin Infect Dis 2023)

Clinical Infectious Diseases
MAJOR ARTICLE

Objectifs PK/PD ? (1)

Attainment of Target Antibiotic Levels by Oral Treatment of Left-Sided Infective Endocarditis: A POET Substudy

- Probabilité d'atteindre la cible / BP
- Amoxicilline et Linézolide 88 – 100%
- Moxifloxacine et rifampicine 71 – 10



Objectifs PK/PD ? (2)

- Probabilité d'atteindre la cible / CMI
- J1 : 13 patients n'atteignent la cible que pour 1 ATBT
- J5 : 14 patients n'atteignent la cible que pour 1 ATBT

Posologie Amoxicilline per os ?
TDM

Clinical Infectious Diseases
MAJOR ARTICLE

Attainment of Target Antibiotic Levels by Oral Treatment of Left-Sided Infective Endocarditis: A POET Substudy

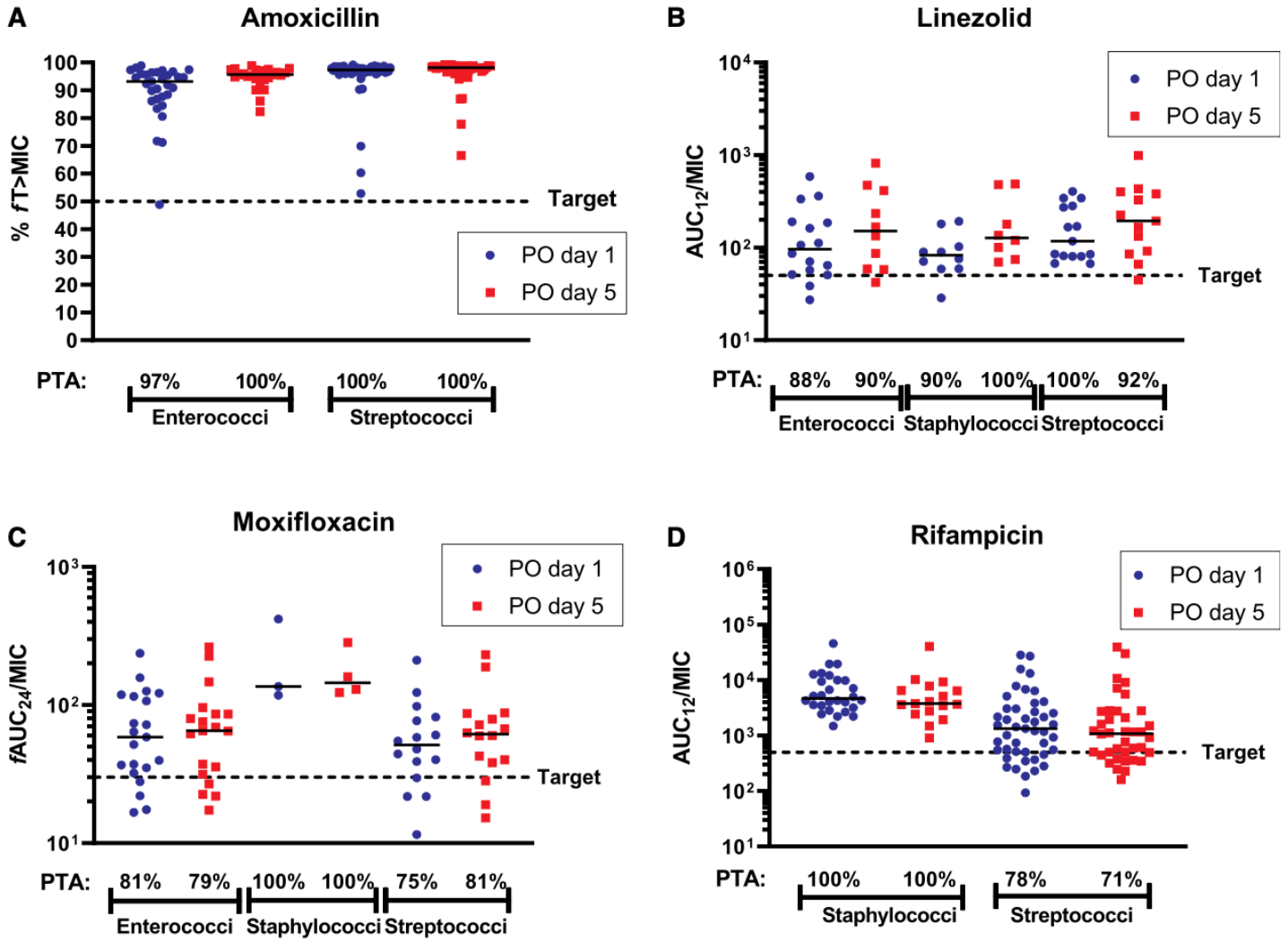


Figure 4. Target attainment of oral antibiotics in relation to minimal inhibitory concentrations. Solid black bars are median values. The letter *f* indicates the free unbound concentration; eg, *f*T > MIC means the time above MIC of the unbound concentration. Abbreviations: AUC, area under concentration-time curve; MIC, minimal inhibitory concentration; PO, oral; PTA, probability of target attainment; T, time.

Traitement

7.4. *Streptococcus pneumoniae*, β-haemolytic streptococci (groups A, B, C, and G)

- Idem Streptocoques oraux
- Pas de schéma en 2 semaines
- Si PSDP : ceftriaxone ou cefotaxime ou vancomycine
- Si méningite pas d'amoxicilline
- Relais oral possible à J10-J14 : 2 antibiotiques ?

Pronostic

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- Chirurgie dans la semaine suivant le diagnostic (28, 60%; délai 6.5 j [2.0-10.5]
- Taux de survie à J90 : 83% (n=33)
  - 7 décès dont 6 liées à l'EI
  - 5 EI sur valve prothétique: 3 décès délai 22j (21-40,5)
  - 2 rechutes 48H et 6 mois après arrêt ATBT
- Taux de survie à 2 ans : 67% (n=28)
  - 5 décès
  - Âge > 65 ans (p<0,001)
  - Chirurgie "protectrice" (15 vs 6; p = 0.012)
  - Méningite ns, Austrian syndrome ns
- 50% des décès directement liés à l'EI

Pronostic

- Etude cas/témoins (23 ans, monocentrique)
- 28 EI à pneumocoque / 56 EI autres causes (21 S. aureus)
- Alccolisme et tabagisme
- Absence de valvulopathie
- Gravité clinique : choc et insuffisance cardiaque
- Chirurgie cardiaque 64,3%
  - précoce (14.1 ± 18.2 versus 69.0 ± 61.1 j)

(M. Daudin et al, Clin Microbiol Infect 2016)

TABLE I. Comparison of pneumococcal endocarditis (cases), and non-pneumococcal infective endocarditis (controls[a])

Characteristics	Pneumococcal endocarditis (n = 28)	Endocarditis due to other bacteria (n = 56)	p value
Baseline			
Age (years), mean ± SD	59.1 ± 15.3	60.9 ± 15.3	NS
Male gender, *n* (%)	19 (67.8)	40 (71.4)	NS
Alcoholism, *n* (%)	11 (39.3)	6 (10.7)	<0.01
Smoking, *n* (%)	17 (60.7)	12 (21.4)	< 0.01
Previously known valvular disease, *n* (%)	5 (17.9)	22 (39.3)	0.047
Valve(s) involved, *n* (%)			
Aortic	19 (70.4)	35 (62.5)	NS
Mitral	10 (37.0)	28 (50.0)	NS
Tricuspid	3 (11.1)	2 (3.6)	NS
Pulmonary	1 (3.7)	0 (0)	NS
Two or more valves	4 (14.8)	9 (16.1)	NS
Peri-valvular abscess	8 (34.8)	17 (30.4)	NS
Cardiac surgery, *n* (%)	18 (64.3)	31 (55.4)	NS
Time from symptoms onset to surgery, days ± SD	14.1 ± 18.2	69.0 ± 61.1	<0.001
Time from admission to surgery, days ± SD	13.3 ± 17.1	34.3 ± 43.0	0.02
Complications, *n* (%)			
Shock	15 (53.6)	13 (23.2)	<0.01
Heart failure[b]	18 (64.3)	13 (23.2)	<0.01
Embolism	5 (17.9)	16 (28.6)	NS
Meningitis	8 (28.6)	3 (5.4)	<0.01
In-hospital mortality	2 (7.1)	7 (12.5)	NS
5-year mortality	11 (39.3)	10 (17.9)	NS

Abbreviations: NS, not significant; SD, standard deviation.
[a]Controls were endocarditis due to *Staphylococcus aureus* (n = 21), non-pneumococcal *Streptococcus* spp. (n = 20), *Enterococcus* spp. (n = 8), other Gram-positive cocci (n = 4) and Gram-negative bacilli (n = 3).

Pronostic

- Mortalité à 5 ans 54,1%

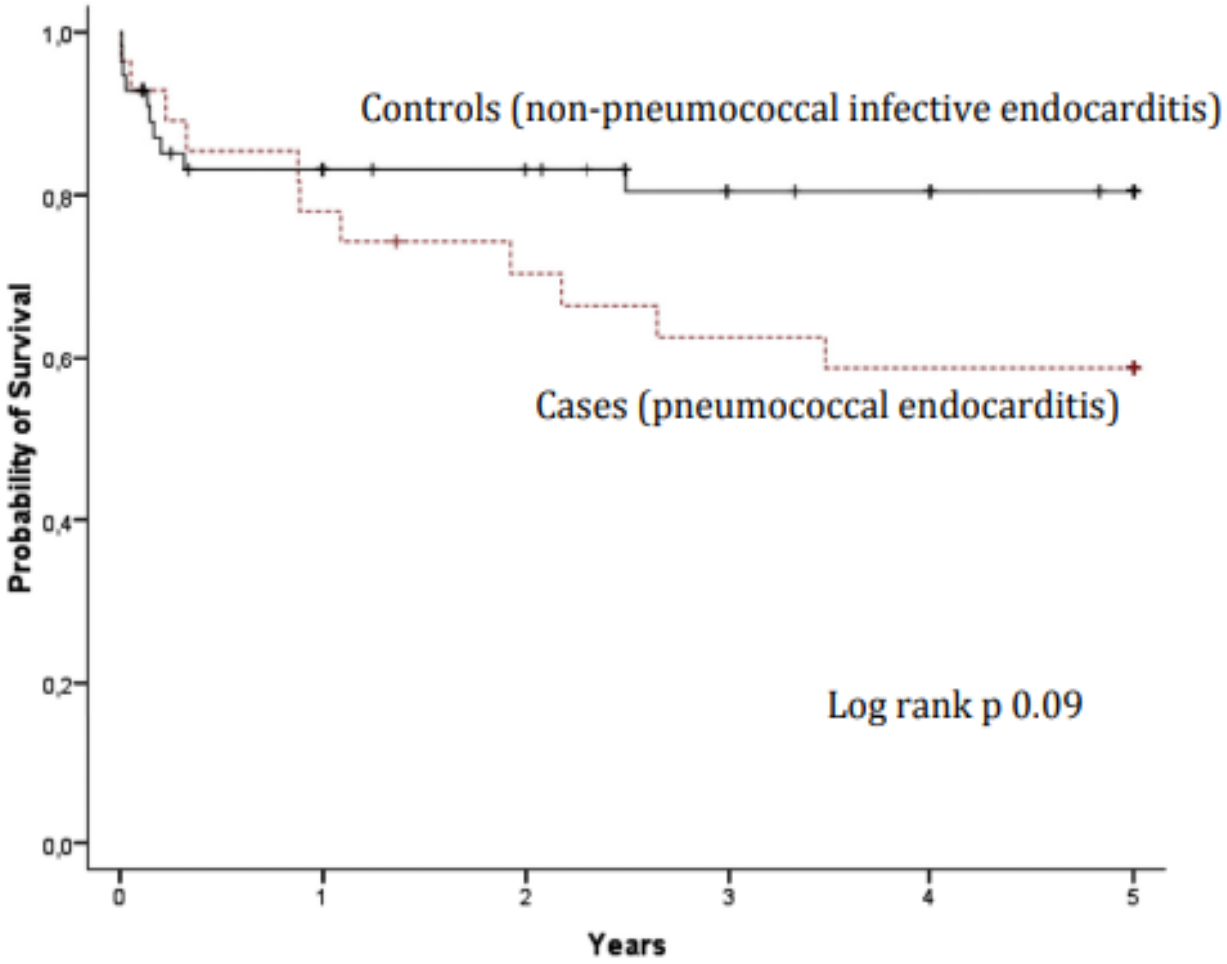

FIG. 1. Kaplan–Meier curve for cumulative survival probability.

(M. Daudin et al, Clin Microbiol Infect 2016)

Quelle prévention ?

- Vaccination anti pneumococcique ?
- Si FDR d'infection invasive à pneumocoque

b) Patients non immunodéprimés porteurs d'une maladie sous-jacente prédisposant à la survenue d'Infection Invasive à Pneumocoque (IIP) :

- Cardiopathie congénitale cyanogène, insuffisance cardiaque ;
- Insuffisance respiratoire chronique, bronchopneumopathie obstructive, emphysème ;
- Asthme sévère sous traitement continu ;
- Insuffisance rénale ;
- Hépatopathie chronique d'origine alcoolique ou non ;
- Diabète non équilibré par le simple régime ;
- Patients présentant une brèche ostéo-méningée, un implant cochléaire ou candidats à une implantation cochléaire.

- Pas au décours d'une IIP en l'absence de FDR

Conclusion

- Rare mais ça existe
- Grave
- Peu FDR EI
- Facteurs de virulence spécifiques des *S. pneumoniae* ?
- Relais oral ?

Des questions ?

P. Tattevin à votre écoute