Caractéristiques et variations régionales des endocardites infectieuses (EI) à streptocoques du groupe D (SGD) en France

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pour le groupe de travail de l'AEPEI

Nouvelle classification

Le complexe *Streptococcus bovis/Streptococcus equinus*

Ancienne dénomination	Nouvelle dénomination	Synonyme
S. bovis biotype I	*S. gallolyticus* subsp. *gallolyticus*	*S. caprinus*
S. bovis biotype II.2	*S. gallolyticus* subsp. *pasteurianus*	*S. pasteurianus*
S. bovis biotype II.1	*S. infantarius* subsp. *infantarius* ou subsp. *coli*	*S. lutetiensis*

d'après Schlegel *et al*. J Clin Microbiol. 2003

Données récentes sur l'épidémiologie des EI à SGD

Profile of IE in France

- 2 prospective surveys conducted by the Association pour l'Etude et la Prévention de l'Endocardite Infectieuse (AEPEI) study group
  - Characteristics of infective endocarditis in France in 1991. A 1-year survey.
    F. Delahaye et al, Eur Heart J 1995;16:394-401
  - Changing Profile of Infective Endocarditis Results of a One-Year Survey in France.
    B. Hoen et al. JAMA 2002;288:75-81

Distribution of microorganisms

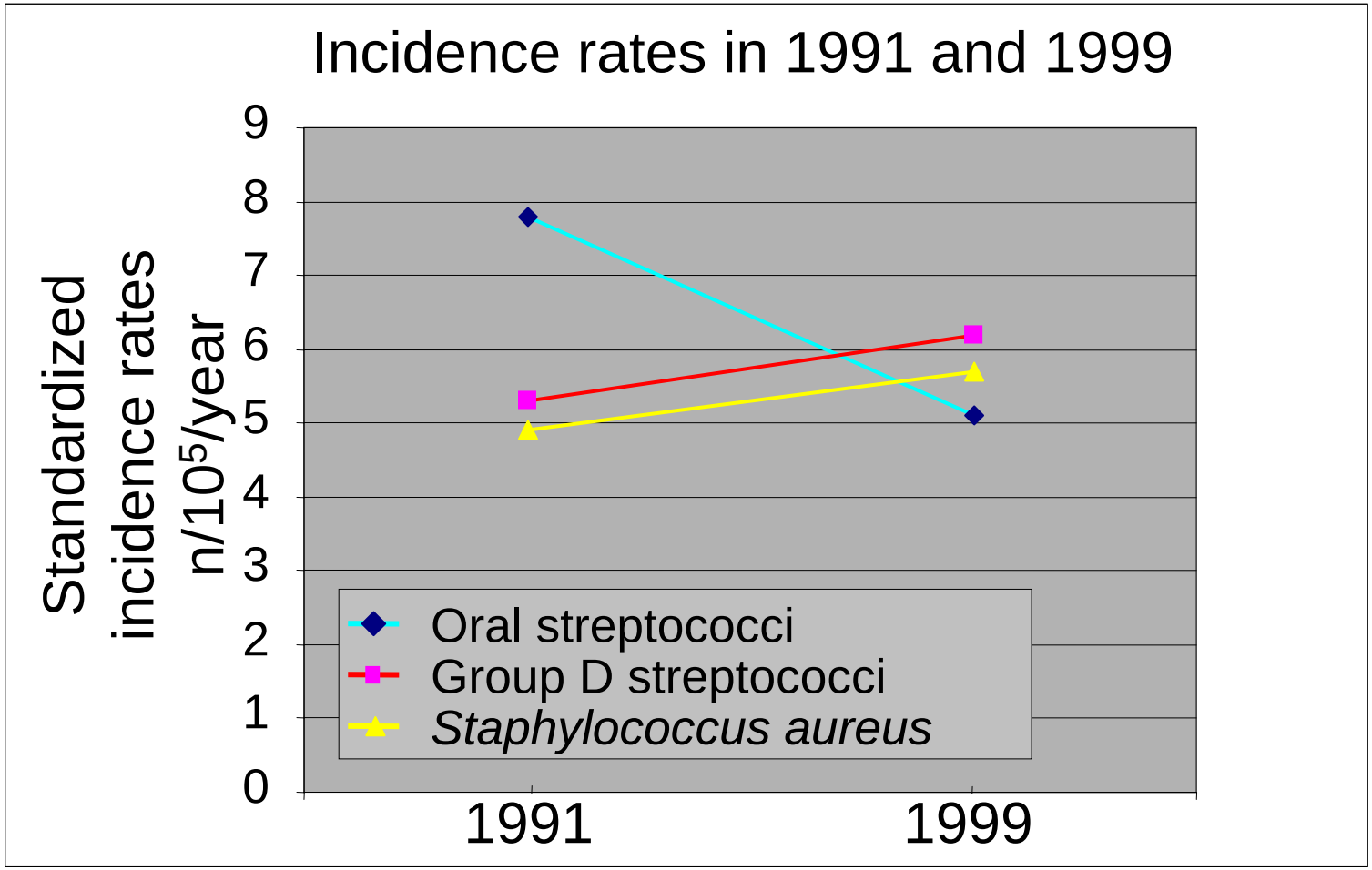
Streptococcaceae	225	58%
Oral streptococci	*68*	*17%*
Group D streptococci	*98*	*25%*
S. gallolyticus (51)		
S. infantarius (6)		
S. bovis biotype II.2 (4)		
Not further identified (37)		
Pyogenic streptococci	*22*	*6%*
Enterococci	*29*	*7%*
Other *Streptococcaceae*	*8*	*2%*
Staphylococcaceae	115	29%
Staphylococcus aureus	*90*	*23%*
Coagulase-negative staphylococci	*25*	*6%*
Other microorganisms	18	5%
≥ 2 microorganisms	13	3%
No microorganism identified	19	5%

From 1991 to 1999: some trends

•No known valvular disease	33%	47%
•Identified microorganism	92%	95%
•*Streptococcus bovis*	13%	25%
•Staphylococci	23%	29%
•Surgical Rx	30%	49%
•Lethality (hospital stay)	21%	17%

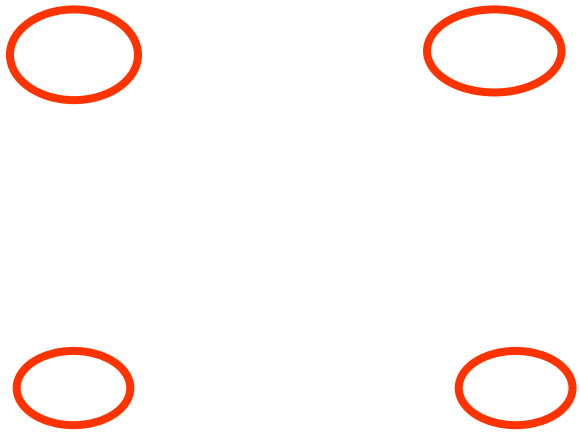
Changes in France

Comparison of results from 2 nationwide surveys in France

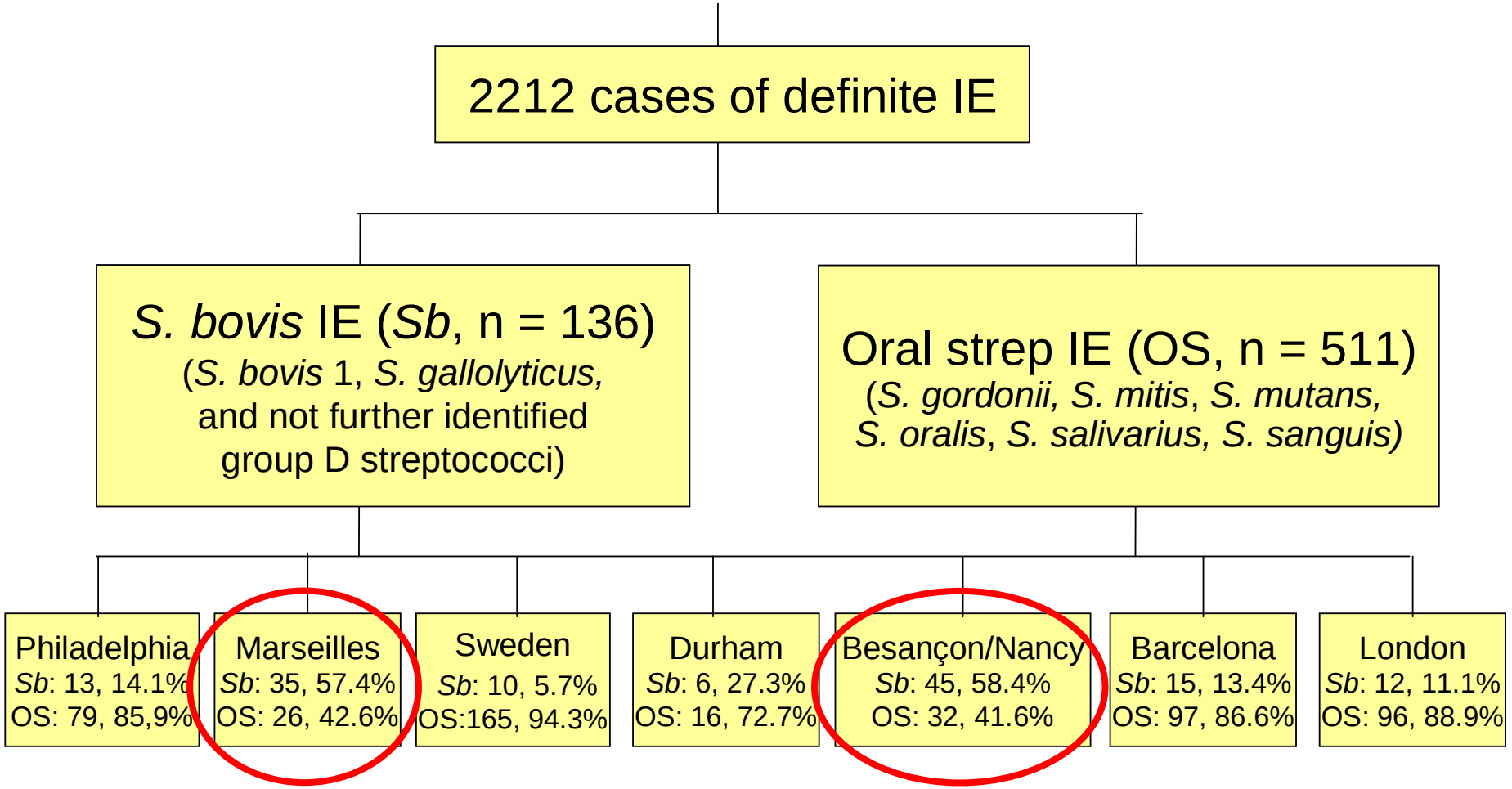


after Hoen *et al*. JAMA 2002

IE one-year French surveys :1999 vs. 1991



Emergence of endocarditis due to group D streptococci: findings derived from ICE-MD



B. Hoen et al., EJCMID 2005;24:12-16

Characteristic	Oral streptococcal IE (*n*=511)	*S. bovis* IE (*n*=136)	*P* value
Age (years), mean ± SD	54.7 ± 18.2	62.9 ± 16.4	<0.00001
Males, no. (%)	354 (69.3)	99 (72.8)	0.46
Period of admission, no. (%)[a]			0.0007
Early decade (1979–1989)	131 (25.7)	16 (12.2)	
Late decade (1990–1999)	379 (74.3)	115 (87.8)	
Geographical origin, no. (%)			<0.00001
France	58 (11.4)	80 (58.8)	
Rest of Europe	358 (70.0)	37 (27.2)	
USA	95 (18.6)	19 (14.0)	
Diabetes, no. (%)	25 (4.9)	13 (9.6)	0.06
Intravenous drug use, no. (%)	33 (6.5)	0	0.0006
Any comorbidity, no. (%)	84 (16.4)	41 (30.1)	0.0003
Congenital heart disease, no. (%)	75 (14.7)	9 (6.6)	0.01
Mitral valve prolapse, no. (%)[b]	36 (11.4)	4 (4.5)	0.07
Prior valve surgery, no. (%)	61 (11.9)	29 (21.3)	0.008
Prosthetic valve, no. (%)	59 (11.5)	27 (19.9)	0.02
Fever >38°C, no. (%)[c]	270 (69.2)	65 (79.3)	0.08
New regurgitation murmur, no. (%)	86 (16.8)	37 (27.2)	0.009
Cardiac failure, no. (%)	156 (30.5)	49 (36.0)	0.25
Multiple-valve involvement, no. (%)	28 (5.5)	19 (14.0)	0.002
Any embolic event, no. (%)	133 (26.0)	35 (25.7)	1.0
Stroke, no. (%)	47 (9.2)	16 (11.8)	0.42
Visible vegetation, no. (%)	352 (68.9)	97 (71.3)	0.60
Intracardiac abscess, no. (%)	41 (8.0)	7 (5.1)	0.36
Surgical treatment, no. (%)	180 (35.2)	44 (32.4)	0.55
In-hospital death, no. (%)	53 (10.4)	17 (12.5)	0.53

Regional variations in streptococcal/enterococcal IE within the ICE-PCS (1779 cases of definite IE)

- 621 (34.9%) were streptococcal/enterococcal IE
  - 319 (51.4%) oral streptococcal IE
  - 188 (30.3%) enterococcal IE
  - 114 (18.3%) group D streptococcal IE
- Four geographical regions were considered
  - North America (NA), South America (SA), Australia/New Zealand (A/NZ), and Europe/Middle East (E/ME).

	NA (n=109)	SA (n=65)	A/NZ (n=132)	E/ME (n=315)	p value
Oral strep	46 (42.2)	**40 (61.5)**	**84 (63.6)**	149 (47.3)	<0.001
Enterococcal	**57 (52.3)**	16 (24.6)	38 (28.8)	77 (24.4)	
Group D strep	6 (5.5)	9 (13.8)	10 (7.6)	**89 (28.3)**	

C. Chirouze et al, submitted

S. bovis endocarditis and its association with chronic liver disease: an underestimated risk factor

	Non-Sb n = 169	Sb n = 30	P value
Age, years (m ± SD)	46.0 ± 17.0	58.6 ±12.4	<0.001
Bivalvular IE (n (%))	13 (7.8)	13 (43.3)	<0.001
Embolism (n (%))	68 (40.0)	22 (73.3)	0.002
Diskitis (n (%))	1 (0.6)	7 (23.3)	<0.001
Liver disease (n (%))	26 (15.4)	17 (56.7)	<0.001

- 45% of the patients had a colonic tumors
- 17 patients with chronic liver disease
  - 14 HCV/HBV, 2 alcohol, 1 unknown

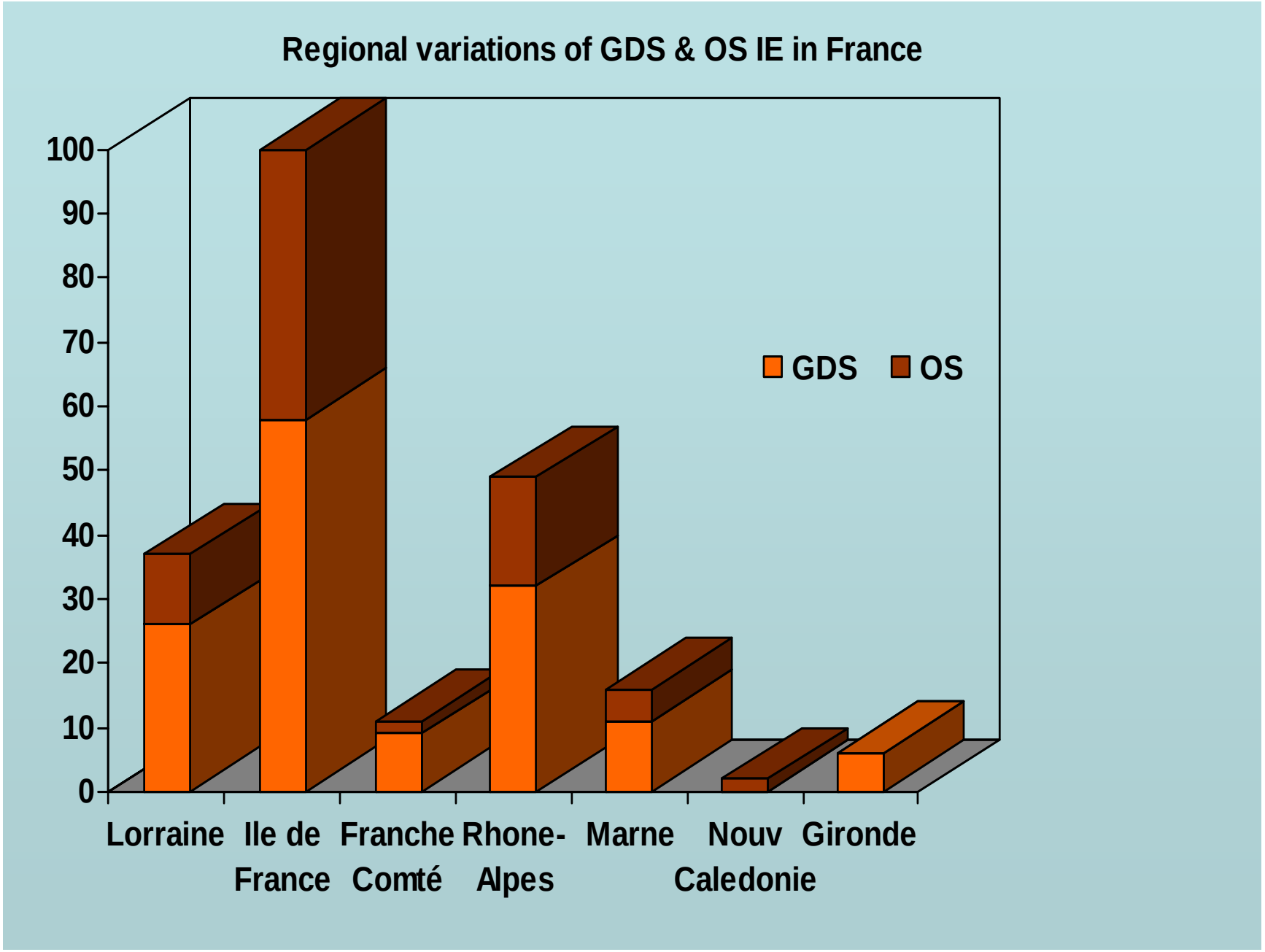
MF Tripodi et al, Clin Infect Dis 2004; 38:1394

Characteristics and regional variations of IE due to group D streptococci in France

	GDS IE N=142	OS IE N=79	P
Age (mean ± SD)	62.7 ± 13.3	56.6 ± 16.1	0.01
Rural residence, n(%)	44 (31.0)	12 (15.2)	0.001
Prior valvulopathy, n(%)	48 (33.8)	53 (67.1)	<0.0001
Diabetes mellitus, n(%)	23 (16.2)	1 (1.3)	0.006
Cirrhosis, n(%)	12 (8.5)	2 (2.5)	0.08
Colon disease, n(%)	71 (50.0)	9 (11.4)	<0.0001

Characteristics and regional variations of IE due to group D streptococci in France

	GDS IE N=142	**OS IE N=79**	**P**
BMI (mean ± SD)	24.2 (4.8)	24.3 (3.9)	0.8
Cardiac failure, n(%)	41 (19.0)[7]	16 (15.2)	0.1
Vasc. phenomena[4], n(%)	55 (38.7)	28 (35.4)	0.6
Embolism[5]**,** n(%)	47 (33.1)	25 (31.6)	0.8
Immun. phenomena[6], n(%)	36 (25.4)	25 (31.6)	0.3
Surgical treatment, n(%)	73 (51.4)	46 (58.2)	0.6
Hospital mortality, n(%)	18 (12.7)	5 (6.3)	0.1


Regional variations of GDS & OS IE in France
100
90
80
70
60
50
40
30
20
10
0
GDS
OS
Lorraine
Ile de France
Franche Comté
Rhone-Alpes
Marne
Nouv Caledonie
Gironde

Molecular epidemiology of *Streptococcus bovis* causing endocarditis in Italian patients

- *25 S. bovis* isolates responsible for endocarditis and bacteremia in Italian patients
  - *S. bovis* I n = 20
  - *S. bovis* II n = 5
- PFGE analysis
  - 22 different migration profiles (similarity < 87%).
  - 3 strains with identical PFGE in 2 different patients.
- The increase of *S. bovis* endocarditis in Napoli area is likely to result from the selection of sporadic endemic clones from the endogenous intestinal flora.

MF Tripodi et al, Clin Microbiol Infect 2005

Epidemiologie des IE à SGD

- Augmentation récente de son incidence
  - Dans certains pays seulement
  - Vraisemblablement non liée à une diffusion clonale
- Caractéristiques cliniques
  - Patients âgés
  - Risque augmenté en cas de tumeur chronique et d'hépatopathie chronique
  - Patients souvant sans valvulopathie préalable
  - Atteinte multivalvulaire et spondylodiscite fréquentes.
- Rôle de la ruralité ?
  - Alimentation, agents environnementaux ?

Endocardite infectieuse
Streptococcus bovis,
et cancer colique

ou

le cancer colique,
une maladie infectieuse ?

Le début de l'histoire

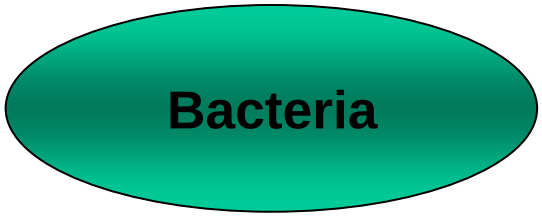
- Association of *Streptococcus bovis* with carcinoma of the colon
  - Klein, N Engl J Med 1977
- *Streptococcus bovis* septicemia and carcinoma of the colon
  - Klein, Ann Intern Med 1979
- *Streptococcus bovis* bacteraemia requires rigorous exclusion of colonic neoplasia and endocarditis
  - Beeching, Quartely J Med 1985

Tumors of the colon increase the risk of developing *Streptococcus bovis* endocarditis a case - control study

	RR	95% CI
No tumor	**1**	**-**
Any colorectal tumor	**3.6**	**1.4 - 9.4**
Adenoma	**3.4**	**1.2 - 9.2**
Adenocarcinoma	**5.7**	**0.9 - 48.5**

B. Hoen et al, Clin Infect Dis 1994; ;19:361

Bacteria and cancer



Helicobacter pylori
Salmonella Typhi
Citrobacter rodentium

chronic infection

chronic inflammation

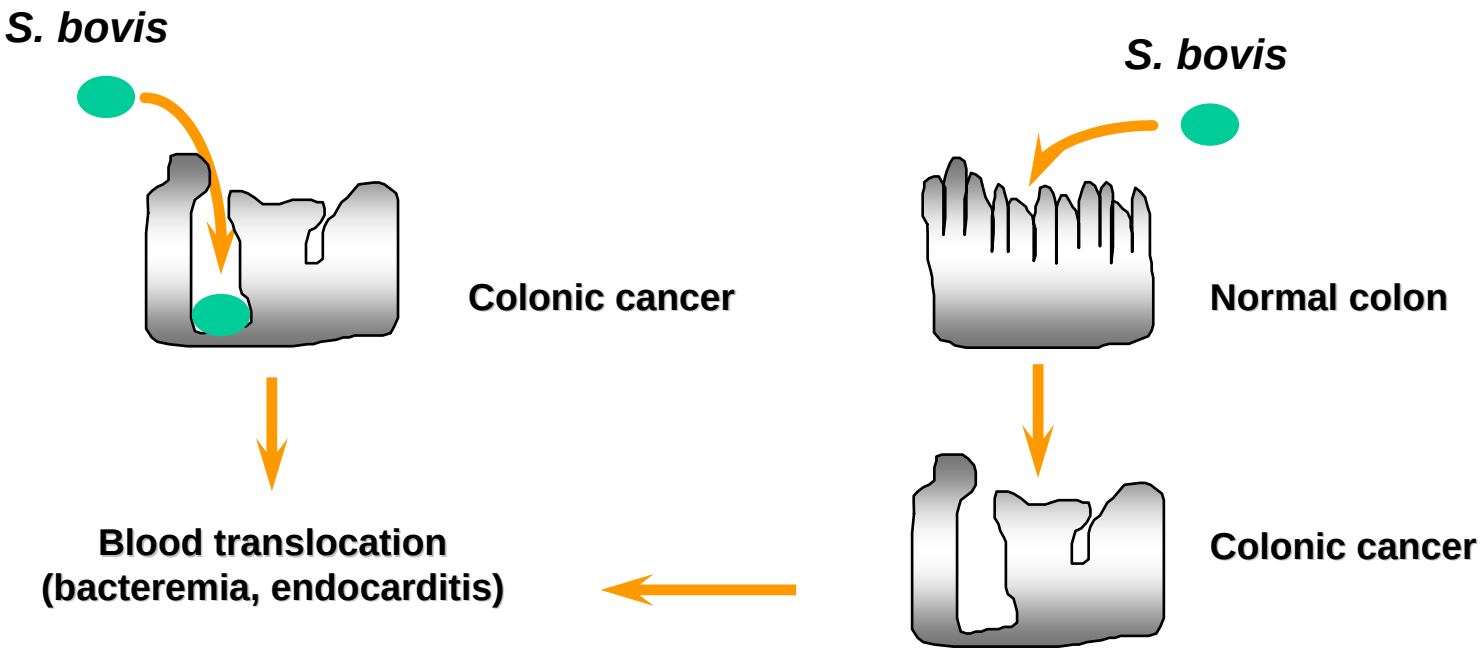
CANCER

Streptococcus bovis and colonic cancer

***S. bovis* bacteremia**

Colonic disease

Colonic tumor



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