

Characteristics and Outcomes in Patients with *Staphylococcus lugdunensis* bacteremia compared with *Staphylococcus aureus* and *Staphylococcus epidermidis* bacteremia

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Background

- Staphylococcus lugdunensis* (*S. lugdunensis*) belongs to a group of coagulase negative *Staphylococci* (CoNS), which is present as a normal skin commensal in healthy individuals.
- Invasive infections caused by *S. lugdunensis* has been increasingly reported¹⁻⁵.
- Whereas, there is no treatment guideline for *S. lugdunensis* bacteremia (SLB) due to a little clinical data.
- Owing to assess appropriate management for SLB, we conducted a retrospective case-control study to investigate characteristics, clinical courses and outcomes for SLB compared with those of *Staphylococcus aureus* (*S. aureus*) bacteremia and bacteremia due to *Staphylococcus epidermidis* (*S. epidermidis*), which is most common pathogen in CoNS-related bacteremia.

Materials and Methods

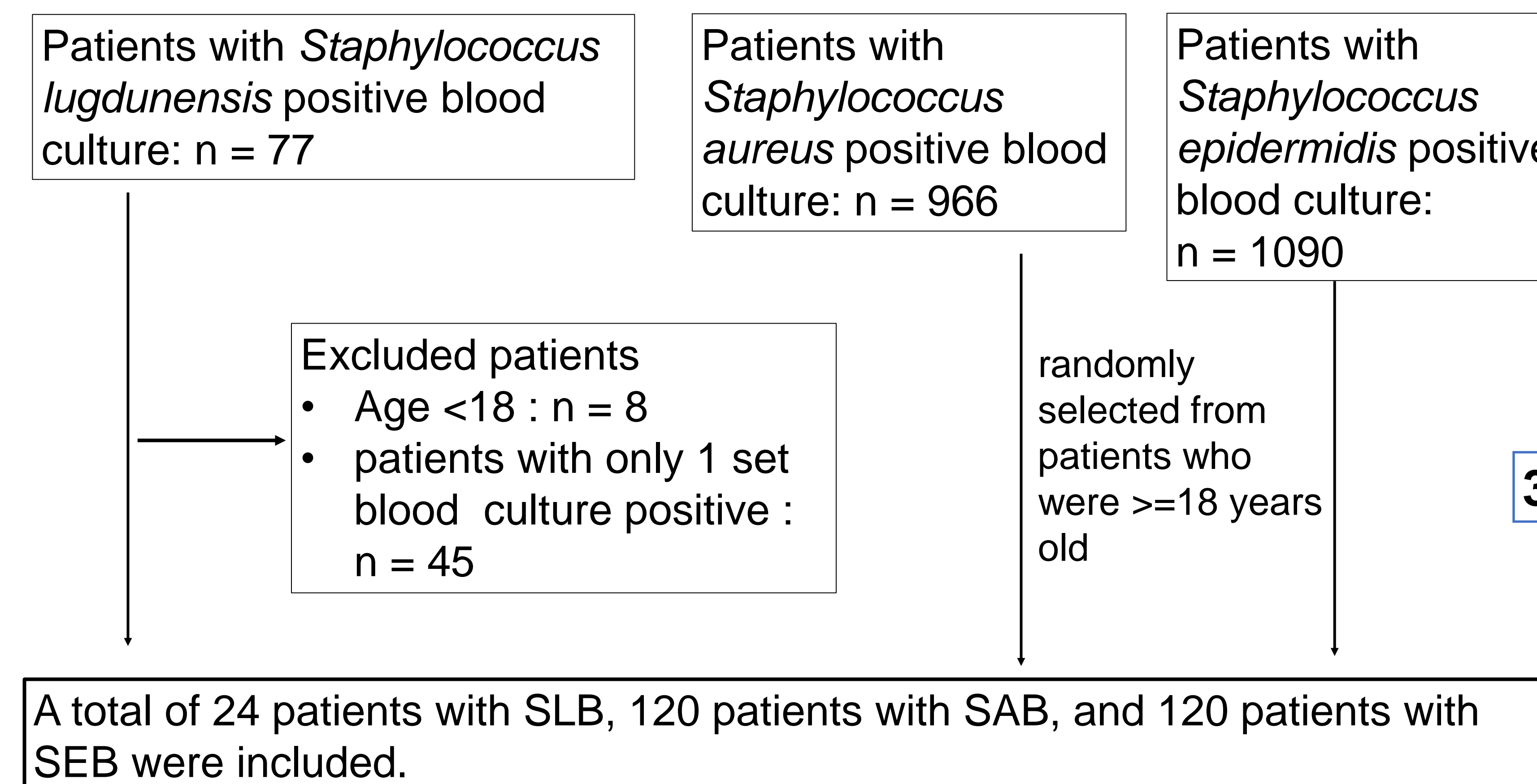
- Setting, study design:** This retrospective case-control study was conducted at Kyoto University Hospital, a tertiary care 1141-bed university hospital located in Japan, from January 1, 2005 to December 31, 2021.
- Patients:** Patients who had at least one set of blood culture collection were included in this study. Of those, patients ≥ 18 years of age with SLB with at least two sets of positive blood cultures, those who had *S. aureus* bacteremia (SAB) with at least one set of positive blood culture and those who had *S. epidermidis* bacteremia (SEB) with at least two sets of positive blood cultures were randomly selected in a 1:5:5 (SLB:SAB:SEB) ratio.
- Variables:** Patients characteristics, illness severity, source of bacteremia, metastatic lesions, clinical managements (follow-up blood culture, echocardiography, early source control, days to appropriate treatment, early optimal therapy and duration of treatment) and outcomes were reviewed.
- Statistical analysis:** When a p-value of <0.05 was revealed for comparisons among three groups, followed comparisons between SLB and SAB, and between SLB and SEB were performed.

References

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(5) Heilbronner, S., *et al.* Clin Microbiol Rev. 2021. (6) Aioda Y., *et al.* Jpn J Infect Dis. 2017.
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Results

Figure; Flow diagram of patients in this study



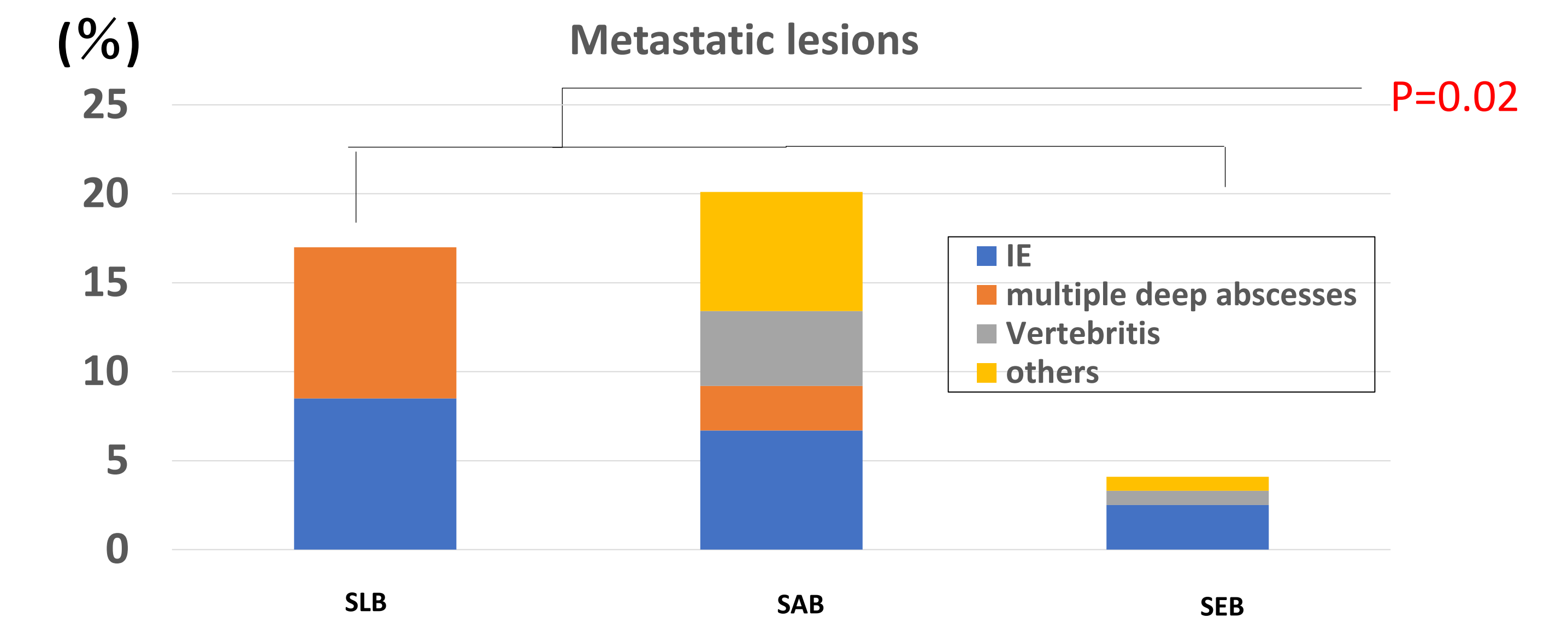
1. Patients Characteristics

	SLB (n=24)	SAB (n=120)	SEB (n=120)	P value among three groups	P value SLB-SAB	P value SLB-SEB
	N (%)	N (%)	N (%)			
Age (years), median (IQR)	69 (60, 75)	68 (49, 77)	65 (51, 73)	0.28		
Male	13 (54)	67 (56)	75 (63)	0.33		
Healthcare setting				<0.01	0.86	<0.01
Community acquired	5 (21)	18 (15)	2 (1.5)			
Healthcare associated	6 (25)	25 (21)	9 (7.5)			
Hospital acquired	13 (54)	77 (64)	109 (91)			
Methicillin resistant	6 (25)	41 (34)	99 (83)	<0.01	0.38	<0.01
Polymicrobial	5 (21)	8(7)	25 (21)	<0.01	0.03	1.0
Comorbidities						
Diabetes	12 (50)	22 (18)	23 (19)	0.23		
Hemodialysis	6 (25)	13 (11)	8 (7)	0.02	0.06	<0.01
Malignancy	13 (54)	54 (45)	75 (63)	0.02	0.41	0.44
Liver cirrhosis	1 (4)	12 (10)	7 (6)	0.38		
Immunosuppressants	8 (33)	33 (28)	57 (48)	<0.01	0.56	0.2
Chemotherapy	6 (25)	23 (19)	47 (39)	<0.01	0.51	0.19
Charlson index, median (IQR)	5 (3, 6)	3 (2, 6)	3 (2, 4)	0.52		

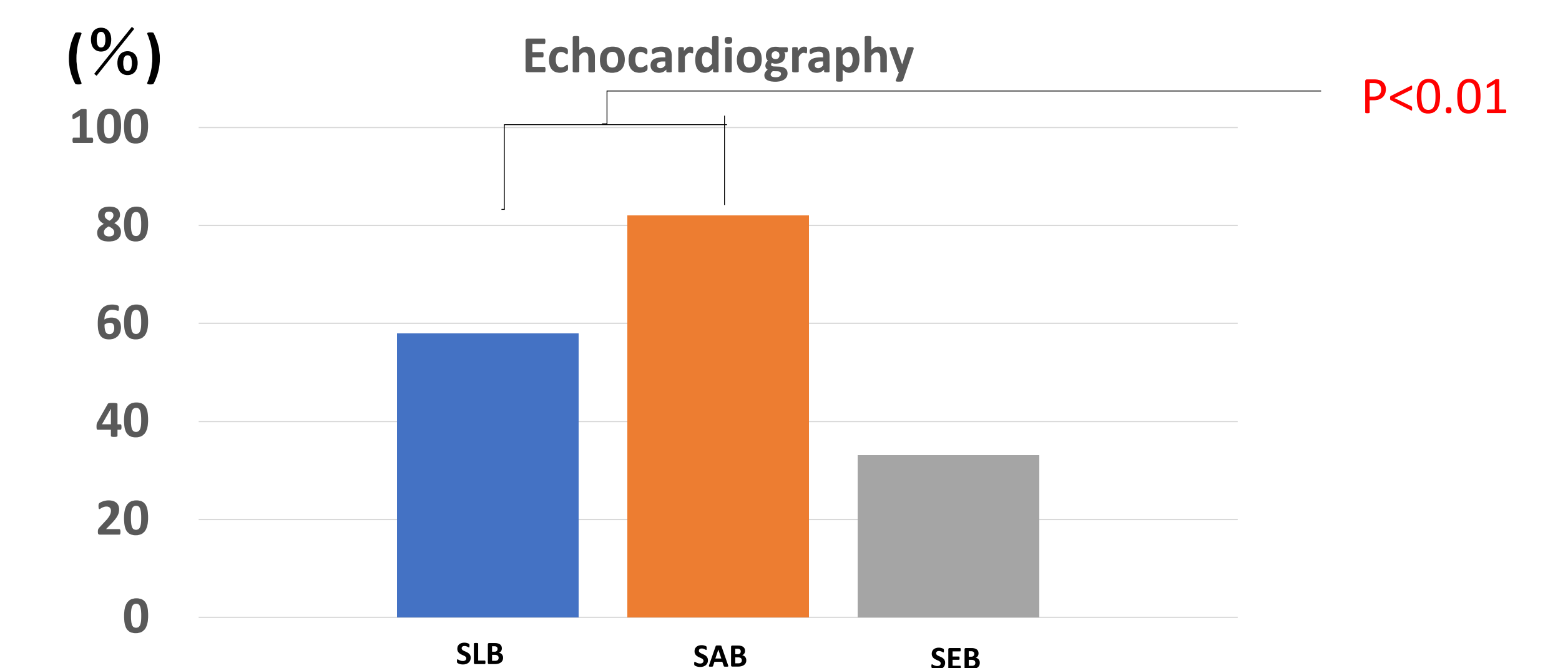
2. Source of bacteremia, metastatic lesions

- Intravascular catheter related bloodstream infection was the most common in each group as source of bacteremia except for unknown focus.
- The proportion of metastatic lesions was comparable between SLB and SAB, higher in SLB than in SEB.

2. Source of bacteremia, metastatic lesions (Continue)



3. Clinical managements



- Echocardiography was performed less frequently in SLB than in SAB.
- Days to start the appropriate therapy from blood culture were shorter in SLB than in SEB [0 (0, 0) vs. 1 (1, 2); $p<0.01$].
- There were no significant differences in proportion of follow-up blood culture, early source control and early optimal treatment among three groups.
- The duration of treatment was comparable in each group.

4. Mortality

	SLB (n=24)	SAB (n=120)	SEB (n=120)	P value among three groups	P value SLB-SAB	P value SLB-SEB
	N (%)	N (%)	N (%)			
7-day mortality	2 (8)	8 (7)	1 (0.5)	0.04	0.77	0.019
30-day mortality	4 (17)	21 (18)	12 (10)	0.23		
Hospital mortality	6 (25)	32 (27)	23 (19)	0.38		

- Seven-day mortality was similar between SLB and SAB, higher in SLB than in SEB.
- Thirty-day and hospital mortalities were comparable between SLB and SAB.

Summary and Conclusions

- SLB is associated with complicated infections and high mortality.
- Echocardiography was performed less frequently in SLB than in SAB.
- Clinical outcome for SLB was worse, as same as that of SAB. Appropriate evaluation and treatment that are recommended for SAB maybe warrant for patients with SLB.