

2019

Predictors of Recurrent Infective Endocarditis in Intravenous Drug Users

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Kongpakpaisarn, Kullatham; Aslam, Sadaf; Tariq, Musaab; Mhaskar, Rahul; Shin, Doosup; Bohra, Chandrashekar; and Somboonwit, Charurut, "Predictors of Recurrent Infective Endocarditis in Intravenous Drug Users" (2019). *Internal Medicine Faculty Publications*. 175.
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170. Predictors of Recurrent Infective Endocarditis in Intravenous Drug Users

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
 Thursday, October 3, 2019: 12:15 PM

Background. Caring for hospitalized patients with infective endocarditis (IE) can be challenging due to the nature of the disease and its complications, underlying medical and psychiatric problems, socioeconomic status and environmental factors. Some of these patients develop recurrent IE after the first episode treated. On-going intravenous (IV) drug use after hospital discharge is the highest predictive factor for recurrent IE. Besides IV drug use, there are limited data of other contributing factors to recurrent IE. Those factors may be modifiable during the first hospitalization to reduce the incidence of recurrent IE.

Methods. A retrospective cohort study was conducted at a large tertiary acute care medical center in Tampa, Florida. All consecutive patients with IE with history of IV drug use from January, 2011 to December, 2017 were included. Basic demographic information, co-morbidities (diabetes, hypertension, chronic lung and kidney diseases, HIV, Hepatitis B and C status, coronary artery diseases), valves involved, length of stay, complications at their first IE episode such as septic shock and stroke were included. Groups were identified based on the first episode, first recurrence and second or more recurrences of IE.

Results. A total of 106 patients were identified based on the inclusion criteria. The association between the type of valve infection (right side and left side) and IE recurrence was found to be statistically significant. ($P = 0.003$). Right side valves are prone to have recurrent IE episodes. People with recurrent IE were more likely to have septic shock ($P = 0.02$) and requiring intensive care unit (ICU) admissions ($P < 0.001$) during their first episode. There was no statistically significant difference between other demographic information and recurrent endocarditis as well as other parameters such as organisms or type of substance used. (Table 1)

Conclusion. Right-sided IE and presence of septic shock during their first episode of IE may be the predictors for recurrent IE. Interventions including closer follow-up, more aggressive septic shock recognition and management, socioeconomic assessment in addition to substance abuse treatments after discharge should be considered to prevent recurrent IE.

Table 1: Demographic Characteristics and Risk factors for IE Patients

Parameters	IE First event	IE first recurrence	IE second recurrence or more	P-value
Gender				0.688
Male	25	15	4	
Female	32	21	9	
Mean Age (year-old)	36 (22-64)	36 (24-58)	37 (12-55)	
Mean Length of Stay (days)	42 (8-118)	57.5 (3-139)	45 (12-93)	
Ethnicity				0.722
Asian	1	0	0	
Black	13	8	1	
Hispanic	9	8	4	
White	33	18	8	
Others	1	2	0	
Medical Insurance				0.803
Medically Insured	46	27	10	
Uninsured	11	9	3	
Living Status				0.391
Stable	55	33	13	
Homeless	2	3	0	
Toxicology				0.705
Amphetamine, Opiates	4	4	2	
Cocaine, Opiates	9	10	4	
Opiates	17	12	2	
Opiates, Oxycodone	8	2	2	
Oxycodone, Cannabinoids, Cocaine	3	0	0	
Oxycodone, Cannabinoids, Opiates	12	5	2	
Underlying Co-Morbidities				
Diabetes mellitus	23	12	7	0.426
Hypertension	32	21	8	0.932
COPD	36	15	7	0.128
CAD	27	17	3	0.257
CKD (serum Cr > 2)	27	12	9	0.075
History of Belligerent in hospital	20	8	6	0.220
HIV	17	13	6	0.504
HBsAg positive	9	21	4	<0.001
HCV Ab reactive	38	23	9	0.487
Requiring ICU during first admission	35	34	12	< 0.001
Type of Valve Infection				0.003
Right-sided valve infection	22	27	7	
Left-sided valve infection	35	9	6	
Initial blood culture				0.233
MSSA	2	1	0	
MRSA	7	6	2	
Streptococcus	19	12	3	
Enterococcus	9	9	4	
Gram negative bacteria	4	4	0	
Mycobacteria	5	4	0	
Yeast (Candida)	2	0	2	
Mixed organisms	9	0	2	
Persistent Blood Culture (72 hours)	13	15	4	0.355
Septic Shock	20	23	7	0.022
Baseline Ejection Fraction (EF)				0.883
Normal EF (> 50%)	47	27	11	
Borderline EF (40-50%)	6	6	1	
Low EF (< 40%)	4	3	1	
CV Events (during first admission)	21	13	8	0.225

Abbreviation

- CAD = Cardiovascular Disease
- CKD = Chronic Kidney Disease
- COPD = Chronic Obstructive Pulmonary Disease
- Cr = Creatinine
- CV = Cerebrovascular
- IE = Infective endocarditis
- MSSA = Methicillin-sensitive Staphylococcus aureus
- MRSA = Methicillin-resistant Staphylococcus aureus

Disclosures. All authors: No reported disclosures.

171. Rising Rates of Gram-Negative Bacilli Blood Stream (GNB-BSI) Infection in Adults

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
 Thursday, October 3, 2019: 12:15 PM

Background. Monitoring bloodstream infections provides updates of the microbiology and antibiotic susceptibility trends. We elected to examine GNB-BSI.

Methods. We retrospectively studied adults (≥18 years old) inpatients with gram-negative bacilli (GNB) bloodstream infection (BSI; January 1, 2010–December 31, 2017), determined the demographics, onset place, microbiology and source. The results were stratified to study year and evaluated by the extended Mantel-Haenszel chi square for linear trends.

Results. GNB were encountered in 4520/14314 (31.6%) positive blood culture (BC) accounting for 2811 BSI episodes (2291 patients) with a steadily increasing rate (table). The 3 most common organisms were *Escherichia coli* (EC; 44.4%), *Klebsiella pneumoniae* (KP; 19.2%) and *Pseudomonas aeruginosa* (PA; 9.6%). GNB-BSI rate increase was mainly in EC-BSI ($P = 0.01$). The rate of other GNB-BSI did not change. Source distribution of EC-BSI did not change and antibiotic resistance did not change.

Conclusion. GNB-BSI is rising, primarily due to EC, without changes in source distribution or antibiotic susceptibility. Prospective studies to look at EC lineage and virulence factors are needed to determine the reason for EC-BSI rise.

	Year of study								P ^b
	2010	2011	2012	2013	2014	2015	2016	2017	
All GNB	320 (10.3)	304 (9.5)	313 (10.4)	300 (10.4)	305 (11.5)	294 (11.1)	319 (12.2)	283 (11.0)	0.006
<i>E. coli</i>	135 (4.3)	142 (4.4)	153 (5.1)	146 (5.1)	143 (5.4)	139 (5.2)	172 (6.6)	121 (4.7)	0.008
KI P ^c	60 (1.9)	48 (1.5)	37 (1.2)	36 (1.2)	44 (1.7)	45 (1.7)	42 (1.6)	42 (1.6)	1.0
PA ^d	29 (0.9)	26 (0.8)	24 (0.8)	20 (0.7)	23 (0.9)	17 (0.6)	21 (0.8)	24 (0.9)	0.8
Other GNB	80 (2.6)	65 (2.0)	73 (2.4)	72 (2.5)	60 (2.2)	66 (2.5)	59 (2.3)	73 (2.8)	0.1
Mixed	16 (0.5)	23 (0.7)	26 (0.9)	26 (0.9)	35 (1.4)	27 (1.1)	25 (1.2)	23 (1.1)	0.5
# discharges	31156	31931	30166	28860	26635	26520	26132	25796	

a: Per 1000 discharges; b: Extended Mantel-Haenszel test for linear trends; c: *Klebsiella pneumoniae*; d: *Pseudomonas aeruginosa*.

Disclosures. All authors: No reported disclosures.

172. Risk Factors for 30-Day Mortality in Patients with Staphylococcus aureus Bacteremia at a Community Hospital: A Prospective Case-Control Study

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
 Thursday, October 3, 2019: 12:15 PM

Background. *Staphylococcus aureus* bacteremia (SAB) is associated with 30-day all-cause mortality rates approaching 20–30%. The purpose of this case-control study was to evaluate risk factors for 30-day mortality in patients with SAB at a community hospital.