

Alcohol intake is a predictive factor of developing heart failure among patients with infective endocarditis

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Background

Infective endocarditis (IE) complicated with heart failure (HF) is almost fatal¹. We aimed to investigate the risk factors, including habitus, associated with developing HF.

Materials/Methods

This retrospective study reviewed the medical charts of patients admitted to Juntendo University Hospital (1020-bed hospital) between February 2012 and March 2016.

Patients with IE who received infectious disease consultation were included. The data assessed were age, sex, habitus, underlying diseases, qSOFA, C-reactive protein (CRP), procalcitonin (PCT), cardiovascular surgery history, and crude in-hospital mortality.

Definition

IE was defined according to modified Duke's criteria (possible or definitive)². HF was defined according to the guidelines of the European Society of Cardiology³.

Statistical analysis

All variables with $P < 0.1$ in the univariate analysis, habitus (smoking and alcohol intake), qSOFA, and known factors related to HF were evaluated using the multivariate model with the level of significance set at $P < 0.05$. All statistical analyses were performed using R version 3.1.1.

Results

Table. Demographic and clinical characteristics of 60 patients with IE.

	Overall			Univariate analysis, <i>P</i>	Age ≥ 65 years		Univariate analysis, <i>P</i>	Multivariate analysis for overall population, OR (95% CI), <i>P</i>
	Overall n=60 (range or %)	Non-heart failure n=26 (range or %)	Heart failure n=34 (range or %)		Non-heart failure n=10 (range or %)	Heart failure n=22 (range or %)		
-Demographic characteristics								
median age, years (range)	66 (26-92)							
age ≥ 65 years	32 (53.3)	10 (38.5)	22 (64.7)	<0.1				15.7 (1.68-146), <0.05
female sex	17 (28.3)	8 (30.8)	9 (26.5)	NS	4 (40.0)	7 (31.8)	NS	NS
mongolian	60 (100.0)							
prosthetic valve	17 (28.3)	9 (34.6)	8 (24.2)	NS	4 (40.0)	7 (31.8)	NS	NS
-Underlying condition *overlapped								
cardiac vascular disease	38 (63.3)	15 (57.7)	23 (67.6)	NS	5 (50.0)	17 (77.3)	NS	NS
diabetes mellitus	8 (13.3)	4 (16.0)	4 (12.1)	NS	3 (30.0)	3 (13.6)	NS	NS
hemodialysis	4 (6.7)	2 (8.0)	2 (6.1)	NS	2 (20.0)	0	<0.1	
previous infective endocarditis	1 (1.7)	1 (3.8)	0 (0)	NS	0	0	NS	
smoking	23 (38.3)	7 (30.4)	16 (47.1)	NS	2 (22.2)	11 (50.0)	NS	NS
alcohol intake	27 (45.0)	10 (45.5)	17 (51.5)	NS	0	11 (50.0)	<0.05	12.10 (1.31-112), <0.05
statin use	9 (15.0)	5 (20.0)	4 (11.8)	NS	3 (33.3)	3 (13.6)	NS	NS
-qSOFA, Laboratory data								
qSOFA 2,3	3 (5.0)	2 (7.7)	1 (2.9)	NS	1 (10.0)	1 (4.5)	NS	NS
median CRP (mg/dL)	4.5 (0.1-21.9)	4.2 (0.1-21.9)	5.1 (0.2-20.3)	NS				
median PCT (ng/mL)	0.2 (0.04-19.1)	0.205 (0.04-18.38)	0.25 (0.04-19.05)	NS				
PCT > 0.3 (ng/mL)	16 (26.7)	7 (35.0)	9 (34.6)	NS	2 (25.0)	7 (36.8)	NS	NS
-Vegetation	41 (68.3)	16 (69.6)	25 (78.1)	NS	6 (66.7)	15 (75.0)	NS	NS
-Metastatic infections	39 (65.0)	17 (65.4)	22 (64.7)	NS	8 (80.0)	13 (59.1)	NS	NS
-Outcome								
surgery	38 (63.3)	16 (61.5)	22 (64.7)	NS	4 (40.0)	13 (59.1)	NS	
hospital mortality	16 (26.7)	4 (16.0)	12 (35.3)	NS	3 (30.0)	10 (45.5)	NS	
-Microorganism *overlapped								
<i>Staphylococcus aureus</i>	8 (13.3)	4 (15.4)	4 (11.8)	NS	2 (20.0)	2 (9.1)	NS	
<i>Streptococcus</i> spp.	18 (30.0)	8 (30.8)	10 (29.4)	NS	1 (10.0)	6 (27.3)	NS	
<i>Enterococcus faecalis</i>	9 (15.0)	2 (7.7)	7 (20.6)	NS	0	5 (22.7)	NS	
others	26 (43.3)	13 (50)	13 (38.2)	NS	7 (70.0)	10 (45.5)	NS	

OR : odds ratio, CI : confidence interval, N.S : not significant
Metastatic infections : perivalvular abscess, vertebral osteomyelitis, deep abscess, septic arthritis, endophthalmitis, cerebrovascular events and mycotic aneurysm.

Conclusions

Age ≥ 65 years and alcohol intake were independent risk factors associated with developing HF in patients with IE (OR 15.7, 95%CI 1.68-146.0, $P < 0.05$; OR 12.1, 95%CI 1.31-112.0, $P < 0.05$, respectively).

Elderly patients had a high risk of HF. It was reported that that HF incidence increased with age⁴.

Long-term excess alcohol consumption is one of the most important causes of secondary dilated cardiomyopathy⁴. In our study, the potential myocardial damage caused by long-term alcohol intake may be present and may have caused HF.

To our knowledge, this is the first report to show that alcohol intake is related to IE with HF.

Limitations

This was a retrospective study. The information was limited to medical records, and some data may have been incomplete.

The number of cases was insufficient.

The quantity of alcohol intake and the drinking pattern were not assessed. Further investigation with objective quantitation is needed.

Bibliography

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2. Clin Infect Dis. 2000;30:633-638.
3. Eur J Heart Fail. 2016;18:891-975.
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