ژورنال کلاب

1402/06/20

Positive Rate and Utility of Blood Culture among Nursing and Healthcare-associated Pneumonia Inpatients

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Definitions

- CAP
  - Community-acquired pneumonia is defined as pneumonia that is acquired outside the hospital. The most commonly identified pathogens are Streptococcus pneumoniae, Haemophiles influenzae, atypical bacteria (ie, Chlamydia pneumoniae, Mycoplasma pneumoniae, Legionella species), and viruses.
- HCAP
  - infections that occur prior to hospital admission in patients with specific risk factors (immunosuppression, recent hospitalization, residence in a nursing facility, requiring dialysis)

Study Population

- NHCAP
- residence in a long-term care hospital or nursing home
- residence in a long-term care hospital or nursing home
- elderly or disabled individuals requiring care (performance status 3 or 4)
- outpatients regularly receiving infusion therapy (chronic dialysis, antibiotics, cancer chemotherapy, or immunosuppressive drugs)

Blood Cultures

- True-Positive Rates (4-7%)
- coagulase-negative Staphylococci (CNS)
- Clostridium species
- Propionibacterium species
- Bacillus species

Severity of Pneumonia

- A-DROP (≥3)
- (Based on CURB-65)

  - age (men 70 years old, women 75 years old)
  - dehydration (blood urea nitrogen 21 mg/dL)
  - respiratory failure (SpO2 ≤ 90% or PaO2 ≤ 60 Torr)
  - orientation disturbance
  - systolic blood pressure ≤ 90 mmHg

Severity of Pneumonia

- qSOFA (≥2)
  - respiratory rate (≥22 breaths/min)
  - Altered mental state
  - systolic blood pressure (≤ 100 mmHg)

Results

	Total
n	205
Age, years	87.8±6.5 (69-102)
Male	91 (44.4%)
Care level	
0	9 (4.4%)
1	9 (4.4%)
2	20 (9.8%)
3	47 (22.9%)
4	56 (27.3%)
5	64 (31.2%)
Charlson Comorbidity Index	1.8±1.1
Comorbidity	
Cerebrovascular disease	59 (28.8%)
Chronic pulmonary disease	15 (7.3%)
Diabetes mellitus	24 (11.7%)
Heart disease	45 (22.0%)
Chronic liver disease	6 (2.9%)
Moderate-severe renal dysfunction	4 (2.0%)
Dementia	127 (62.0%)
Malignancy	32 (15.6%)
qSOFA	1.0±0.8
Cases of qSOFA ≥2	49 (23.9%)
A-DROP	2.5±1.0
Cases of A-DROP ≥3	105 (51.2%)
Blood culture execution	150 (73.2%)
Blood culture positive	26 (17.3%)
True positive (true bacteremia)	8 (5.3%)
Contaminated	18 (12.0%)

Results

Case	Outcome	Blood culture	Sputum culture	Antibiotics
1	Survived	*Klebsiella pneumoniae*	*Staphylococcus aureus* *α-Streptococcus*	SBT/ABPC (10 days)
2	Survived	*Klebsiella pneumoniae*	*Klebsiella pneumoniae* *Escherichia coli* *α-Streptococcus*	TAZ/PIPC (6 days) following SBT/ABPC (4 days)
3	Survived	*Enterococcus faecalis*	*Pseudomonas aeruginosa* ESBL-*Klebsiella pneumoniae* *α-Streptococcus*	TAZ/PIPC (8 days)
4	Survived	MRSA	MRSA *α-Streptococcus*	TAZ/PIPC (3 days) following SBT/ABPC (7 days), LZD (oral) (11 days)
5	Survived	*Enterococcus faecalis*	No sputum	SBT/ABPC (10 days)
6	Survived	*Enterococcus faecalis*	MRCNS *Enterobacter aerogenes* *α-streptococcus*, *Neisseria*	SBT/ABPC (6 days)
7	Died	*Staphylococcus aureus*	*Staphylococcus aureus* *Enterococcus faecalis*	SBT/ABPC (4 days) following SBT/ABPC (oral) (3 days)
8	Died	MRSA	MRSA *Escherichia coli* *α-streptococcus*	TAZ/PIPC (7 days)

MRSA: methicillin-resistant *Staphylococcus aureus*, ESBL: extended-spectrum beta-lactamase, MRCNS: methicillin-resistant coagulase-negative *Staphylococci*, SBT/ABPC: sulbactam/ampicillin, TAZ/PIPC: tazobactam/piperacillin, LZD: linezolide

Discussion

(a) All patients enrolled			
	Survivors	Non-survivors	p
n	173	32	
Age, years	87.9±6.6	87.1±6.2	0.46
Male	70 (40.5%)	21 (65.6%)	0.01
Care level			
0	9 (5.2%)	0 (0.0%)	0.50
1	8 (4.6%)	1 (3.1%)	
2	17 (9.8%)	3 (9.4%)	
3	38 (22.0%)	9 (28.1%)	
4	50 (28.9%)	6 (18.8%)	
5	51 (29.5%)	13 (40.6%)	
Charlson Comorbidity Index	1.8±1.1	1.8±1.0	0.85
Comorbidity			
Cerebrovascular disease	50 (28.9%)	9 (28.1%)	0.92
Chronic pulmonary disease	13 (7.5%)	2 (6.3%)	0.57
Diabetes mellitus	19 (11.0%)	5 (15.6%)	0.31
Heart disease	36 (20.8%)	9 (28.1%)	0.35
Chronic liver disease	5 (2.9%)	1 (3.1%)	0.64
Moderate-severe renal dysfunction	4 (2.3%)	0 (0.0%)	0.50
Dementia	110 (63.6%)	17 (53.1%)	0.26
Malignancy	25 (14.5%)	7 (21.9%)	0.20
qSOFA	0.9±0.7	1.5±0.9	<0.001
A-DROP	2.4±0.9	3.2±0.9	<0.001
Cases of qSOFA ≥2	34 (19.7%)	15 (46.9%)	<0.001
Cases of A-DROP ≥3	73 (42.2%)	27 (84.4%)	<0.001
Obtained blood culture	124 (71.7%)	26 (81.3%)	0.26

Discussion

(b) Patients with blood culture

	Survivors	Non-survivors	p
n	124	26	
Age, years	87.7±6.7	86.4±6.6	0.33
Male	48 (38.7%)	19 (73.1%)	<0.001
Care level			
0	6 (4.8%)	0 (0.0%)	0.54
1	4 (3.2%)	0 (0.0%)	
2	12 (9.7%)	2 (7.7%)	
3	27 (21.8%)	8 (30.8%)	
4	39 (31.5%)	6 (23.1%)	
5	36 (29.0%)	10 (38.5%)	
Charlson Comorbidity Index	1.8±1.1	2.0±1.0	0.22
Comorbidity			
Cerebrovascular disease	35 (28.2%)	9 (34.6%)	0.51
Chronic pulmonary disease	7 (5.6%)	1 (3.8%)	0.58
Diabetes mellitus	16 (12.9%)	4 (15.4%)	0.47
Heart disease	22 (17.7%)	8 (30.8%)	0.13
Chronic liver disease	3 (2.4%)	1 (3.8%)	0.53
Moderate-severe renal dysfunction	3 (2.4%)	0 (0.0%)	0.56
Dementia	80 (64.5%)	14 (53.8%)	0.30
Malignancy	16 (12.9%)	7 (26.9%)	0.07
qSOFA	1.0±0.7	1.4±0.9	0.02
A-DROP	2.4±1.0	3.3±0.8	<0.001
Cases of qSOFA ≥2	26 (21.0%)	11 (42.3%)	0.02
Cases of A-DROP ≥3	48 (38.7%)	23 (88.5%)	<0.001
True bacteremia	6 (4.8%)	2 (7.7%)	0.41

Discussion

	Blood culture	No blood culture	p
n	150	55	
Age, years	87.5±6.7	88.6±6.1	0.39
Male	67 (44.7%)	24 (43.6%)	0.89
Care level			
0	6 (4.0%)	3 (5.5%)	0.34
1	4 (2.7%)	5 (9.1%)	
2	14 (9.3%)	6 (10.9%)	
3	35 (23.3%)	12 (21.8%)	
4	45 (30.0%)	11 (20.0%)	
5	46 (30.7%)	18 (32.7%)	
Charlson Comorbidity Index	1.8±1.1	1.9±1.0	0.49
Comorbidity			
Cerebrovascular disease	44 (29.3%)	15 (27.3%)	0.77
Chronic pulmonary disease	8 (5.3%)	7 (12.7%)	0.07
Diabetes mellitus	20 (13.3%)	4 (7.3%)	0.23
Heart disease	30 (20.0%)	15 (27.3%)	0.26
Chronic liver disease	4 (2.7%)	2 (3.6%)	0.51
Moderate-severe renal dysfunction	3 (2.0%)	1 (1.8%)	0.7
Dementia	94 (62.7%)	33 (60.0%)	0.72
Malignancy	23 (15.3%)	9 (16.4%)	0.85
qSOFA	1.0±0.8	0.9±0.7	0.66
A-DROP	2.6±1.0	2.5±0.9	0.85
Cases of qSOFA ≥2	37 (24.7%)	12 (21.8%)	0.67
Cases of A-DROP ≥3	71 (47.3%)	29 (52.7%)	0.49

Conclusion

True-positive bacteremia was very rare among NHCAP patients in this Japanese hospital setting. A precise strategy for determining indications for obtaining blood cultures should be established for NHCAP patients

با تشکر از توجه شما