

## The Influence of Antimicrobial Abuse to Blood Culture

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**Background :** Blood culture has been used for finding the etiology of bacteremia. The results of its susceptibility test can be an important tool for deciding the direction of treatment. However, the rate of positive blood culture is very low; it, most of all, is because of the abuse of antimicrobials. Especially under the condition which allows anyone to get antimicrobials at any pharmacies and hospitals without antimicrobial susceptibility test as in Korea, the abuse of antimicrobials be brought about, but there is no concrete information about it.

**Methods :** The rate of antimicrobial abuse and the serum antimicrobial activities of 106 patients, whose blood was requested for diagnosis of bacteremia, were investigated, and the results were compared with blood culture results. Thirteen milliliters of blood was aseptically extracted; 10 ml out of it was used for blood culture and the serum separated from 3ml of blood was used for serum antibacterial activities. For the test of serum antimicrobial activities, standard strain of bacteria, *Staphylococcus aureus* ATCC 25923, which are susceptible to every antibiotics was used. And for the blood culture, blood samples were inoculated to aerobic and anaerobic culture broth, and incubated in the automated blood culture system. The abuse of antimicrobials were investigated by the interview with patients and the medical records at admission.

**Results :** The antimicrobial abuse rate was 78.3%(83/106), and the rate of positive blood culture was as low as 6.6%(7/106). The rate of positive serum antibacterial activity was 47.2%(50/106). The rate of positive blood culture in the group of positive serum antimicrobial activity was only 4%(2/50) and that in the group of negative serum antimicrobial activity was 8.9%(5/56). And in the group of positive blood culture, the rate of positive serum antimicrobial activity was 28.6%(2/7) and the rate of negative activity was 71.4%(5/7).

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**Conclusions :** The antimicrobial abuse rate in Korea was considerably high, and the rate of positive blood culture was very low. The rate of positive blood culture in the group of positive serum antibacterial activity was conspicuously lower than that in the group of negative ones. According to these results, the use of antimicrobials before blood culture should be carefully considered for the diagnosis and treatment of bacterial infection.

**Key words :** Antimicrobial abuse, Blood culture

- [1-6], 20-30% , 2. *Staphylococcus aureus* ATCC 25923 tryptic soy broth (TSB) McFarland 0.5 TSB 1:100  $10^5$ - $10^6$  CFU/mL 75 × 10 mm 3 0.5 ml 0.5 ml , 2 0.5 ml TSB 0.5 ml , TSB 1.0 ml . 35 Yang 0.001 ml [9] 98% 가 3. (Vital, BioMerieux sa, France) 5 ml Vital (BioMerieux sa, France) MacConkey 1. 1. 106 27 106 83 78.3% .

**Table 1.** The results of the positive rates of blood culture and serum antimicrobial activities

Serum antimicrobial activity				
		Positive(%)	Negative(%)	Total(%)
Culture	Positive	2 (4.0)	5 (8.9)	7 (6.6)
	Negative	48(96.0)	51(91.1)	99(93.4)
Total		50(100)	56(100)	106(100)

2.

*S. aureus*

27

106 50 47.2%

60.2%(50/83

) .

3.

106 7

6.6%

*E. coli*가 2

, *Alcaligenes* spp. *Acinetobacter baumannii*,  
*Staphylococcus epidermidis*, *Staphylococcus capitis*,  
*Staphylococcus hominis*가 1 .

4.

50

2

4.0%

56

5

8.9%

7

2 28.6% ,

5 ,

71.4%

가 .

[10,11]

20

[12-27]. ,

1960

1970

[13]

16.1%,

[14]

11.8%,

[16] 16.5%

10%

, 1980

[18] 9.3%,

[24]

8.4%,

[19] 7.2%

, 1990

[22] 6.9%,

[23] 5.2%

가

[22] 8.6%,

[23] 14.7%,

[25] 9.8%,

[26] 10.2%

[27] 10.5%

, 1994

9.8% [25]

6.6%

가 가

,

가

[28]

Kunin [29]

가

,

가

가

[9,30-33].

Yang [9]

98%가

가 가

,

78.3%

가

가

1972

1975

Chretien

[31]

Haggerty

[32]

2.1%

3%

,

1983

Cunningham

[33]

18

7.1%

가

Yang [9]

70%



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