Significance of the Amount of Blood Taken for Culture in Bacterial Endocarditis

Pages with reference to book, From 166 To 167

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Abstract

Seventy one blood cultures were taken from 26 patients with bacterial endocarditis. More (5 7.89%) positive cultures were obtained with 10ml blood sample than with 5ml (46.66%). These results indicate that amount of the blood taken affects the frequency of positive results obtained in bacterial endocarditis particularly due to streptococcal infection where the magnitude of bacteraemia is low (JPMA 33: 166, 1983).

Introduction

The magnitude of bacteremia ranges from 5 to more than 300 organisms/mi or blood with only 30 organisms/mi in majority of cases (O'keefe and Gorbach, 1978). The number is fairly constant for any given patient (O.Keefe and Gorbach, 1978). Considering the fewer number of organisms per ml of blood the, chances of getting positive culture will be more with l0ml of blood than with a smaller sample (O'keefe and Gorbach, 1978; Werner et al., 1967; Barrit and Gillespie, 1960; Belli and Waisben, 1956). The effect of the amount of blood taken on the results of blood culture in infective endocarditis is presented in this study.

Material and Method

Five or 10ml venous blood samples were collected from 26 patients with infective endocarditis, at intervals of 2 hours each, over a period of 24-48 hrs. Blood was inoculated into blood culture bottles, containing base broth, at patients bedside, and incubated at 37°C. Culture bottles' were there after examined each day for turbidity. Subcultures were made on the 1 st,4th and 7th day of incubation on the respective media. The media plates were incubated for 24 to 48 hours at 37°C before discarding.

Results

Seventy one blood culture were taken from 26 patients with infective endocarditis. Positive cultures were obtained in 18 patients. Of 53 samples of blood taken from these 18 cases 29 were positive. The effect of the amount of blood taken for culture is shown in the accompanying table.

Table The Percentage of Positive Culture When 5ml and 10ml Blood were drawn.

Etiologic agent	Amount of Blood drawn	Number of cultures	Number of cultures positive	% Positive cultures in 5ml cases	% Positive cultures in 10ml cases
Streptococcus viridans	5 ml	9	3	33.33	
	10 ml	30	17	–	56.66%
Streptococcus faecalis	5 ml	1	0	–	
	10 ml	2	1	–	50%.
Staphylococci	5 ml	5	4	80%	
	10 ml	6	4	–	66.66%
Total :	5 ml	15	7	46.66%	–
Total :	10 ml	38	22	–	57.89%

In patients with streptococcal infection the yield was better with 'larger sample of blood but the amount of blood taken did not affect the results in staphylococcal infections.

Discussion

The amount of blood collected in suspected cases of infective endocarditis is crucial. The low order of magnitude of bacteremia 'demonstrates that a proportion of blood cultures might be negative when only 5ml of blood is ' taken and positive when l0ml is cultured.

In streptococcal endocarditis the bacteremia is generally of low order. In the present study it was seen that 57.89% positive results were obtained when 10ml of blood was drawn from suspected cases of infective endocarditis and only 46.66% if 5ml of blood was taken (O'Keefe and Gorbach, 1978; Werner et al., 1967).

In staphylococcal infection the results did not vary with the size of blood sample because of a higher magnitude of bacteremia in these cases. It is therefore important that definite attention should be given to the amount of blood drawn for culture in infective endocarditis.

References

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