

Bacteriology of blood stream infections in diabetic and non diabetic patients under the course of hemodialysis: a mini-review

Keywords: diabetic, non-diabetic, *Staphylococcus aureus*, CoNS, hemodialysis(HD)

Introduction

In general, infectious diseases are more frequent and serious in patients with diabetes mellitus, which potentially increases their morbidity or mortality. Patients with diabetes may experience higher risk of *Staphylococcus aureus* bacteremia (SAB) than patients without diabetes due to decreased immunity or coexisting morbidities.¹

Patients with ESRD (End-stage renal disease) have a high incidence of bacterial infections.² This increased susceptibility to bacterial infections is due in part to the acquired immune deficiency state of uremia, advanced age, and comorbid conditions such as diabetes mellitus (DM), as well as the frequent and repetitive exposure of patients to potential infectious risk factors during the normal course of dialysis therapy.³

Bloodstream infection was more frequent in diabetics than in non-diabetics (25.8/1000 admissions vs. 5.8/1000 admissions, $p < 0.0001$). Diabetics had a 4.4-fold higher risk of bloodstream infection, were more prone to sepsis of unknown origin and had more septic complications than non-diabetics. The mortality rate was similar in the two groups. Urinary tract infection was the predominant source, and *Escherichia coli* the most frequent microorganism in both groups. *Klebsiella pneumoniae* was more frequent in diabetics than in non-diabetics (18% vs 5%, $p < 0.001$).⁴ *Staphylococci* were a common cause of bacteremic infections of the extremities in diabetic patients (12 of 19, 63%) and nondiabetic patients (20 of 50, 40%).²

A cross-sectional study was conducted for a period of six months in National Kidney Center of Nepal to determine the prevalence of bacteremia in diabetic and non-diabetic patients undergoing hemodialysis course. Blood samples were collected and inoculated in brain heart infusion biphasic media in blood culture bottle and incubated aerobically at 37°C for 18-24 hours. Macroscopic and microscopic observations and conventional biochemical tests were done to identify the isolated organisms. Data were analysed using Statistical Package for the Social Sciences version 17.

Results

Table 1 & Table 2

Table 1 Growth of organisms in diabetic and non- diabetic patients

	Diabetic mellitus		Total (%)	P-value
	Diabetic (%)	Non-diabetic (%)		
Growth	2 (7.7)	24 (92.3)	26(26)	0.35
No growth	11 (14.9)	63 (85.1)	74 (74)	
Total	13(13)	87(87)	100 (100)	

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Table 2 Microorganisms isolated from blood culture

Microorganisms	Diabetic (n=2)	Non- diabetic (n=24)
<i>S. aureus</i>	2	14
CONs	-	7
<i>E. Coli</i>	-	1
<i>Pseudomonas aeruginosa</i>	-	1
<i>Klebsiella pneumoniae</i>	-	1
Total	2	24

Conclusion

In conclusion, there was no association in between bacteremia and diabetes. The diabetics are at high risk of blood stream infection.³ A bloodstream infection was detected significantly in asymptomatic patients. The predominant organism found to be *S. aureus*.

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Conflicts of interest

Authors declare that there is no conflict of interest.

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