

Response to an Intravenous versus Oral Antibiotic Regimen in Brucellosis Bacteremia: A Single-Center Experience

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BACKGROUND

- Human brucellosis is a common infectious multisystem disease that varies in severity and clinical course¹
- Saudi Arabia is considered an endemic area for brucellosis with an infection rate of approximately 70 per 100,000 people^{2,3}
- Bacteremia in brucellosis is common, however, data on epidemiology and management of Brucella bacteremia are scarce
- The World Health Organization recommends using doxycycline with rifampicin or an aminoglycoside for brucellosis

OBJECTIVES

- Primary:** Compare the efficacy of the two treatment regimens (oral doxycycline/rifampicin or ciprofloxacin versus IV gentamicin plus oral doxycycline/rifampicin or ciprofloxacin) in brucella bacteremia
- Secondary:** Compare the frequency of complications of brucellosis and side effects among bacteremia patients receiving intravenous versus oral therapy

METHODS

- Single-center, observational, retrospective cohort study
- Inclusion: All patients > 14 years of age admitted at SFHM from January 2017 through December 2020 with brucella bacteremia
- The diagnosis of brucellosis was based on positive blood culture for Brucella species
- Blood culture negativity after four weeks and clinical cure rate at end of therapy were the co-primary endpoints, while side effects were secondary endpoints

RESULTS

Table 1. Baseline Demographics

	Oral Rx (n=56)	IV Rx (n=37)	P-value
Gender, male, n (%)	40 (43)	24 (25.8)	.328
Age (y), mean (SD)	40.1 (17.44)	50.8 (20.2)	.008
Comorbidities, n (%)			
Diabetes Mellitus	12 (12.9)	7 (7.5)	.492
Hypertension	7 (7.5)	9 (9.7)	.116
Chronic Liver diseases	4 (4.3)	1 (1.1)	.335
Chronic Kidney diseases	2 (2.1)	0 (0)	.360
Causative organisms, n (%)			
Brucella Melitensis	27 (29)	18 (19.4)	.339
Brucella Abortus	31 (33.3)	17 (18.3)	.330
Final diagnosis, n (%)			
Non focal brucellosis	48	29	
Arthritis	0	3	.293
Epididymo-orchitis	3	1	
Sacroiliitis	1	0	
Spondylitis	3	2	
Neurobrucellosis	0	2	
Infective endocarditis	0	1	

Table 2. Comparison of initial drug therapies

Initial Drugs Therapies	Oral Rx (n=56)	IV Rx(n=37)	P-value
Doxycycline + Rifampicin	Count	49	0
	Std.Res	3.7	-4.4
Doxycycline + Ciprofloxacin	Count	7	0
	Std.Res	1.5	-1.7
Doxycycline + Gentamicin	Count	0	35
	Std.Res	-4.6	5.5
Doxycycline + Ciprofloxacin + Ceftriaxone	Count	0	1
	Std.Res	-0.8	0.9
Doxycycline +Rifampicin + Ceftriaxone	Count	0	1
	Std.Res	-0.8	0.9

Std.Res: Standardized Residual

Figure 1. Step-down drugs frequency chart (used after initial IV therapy)

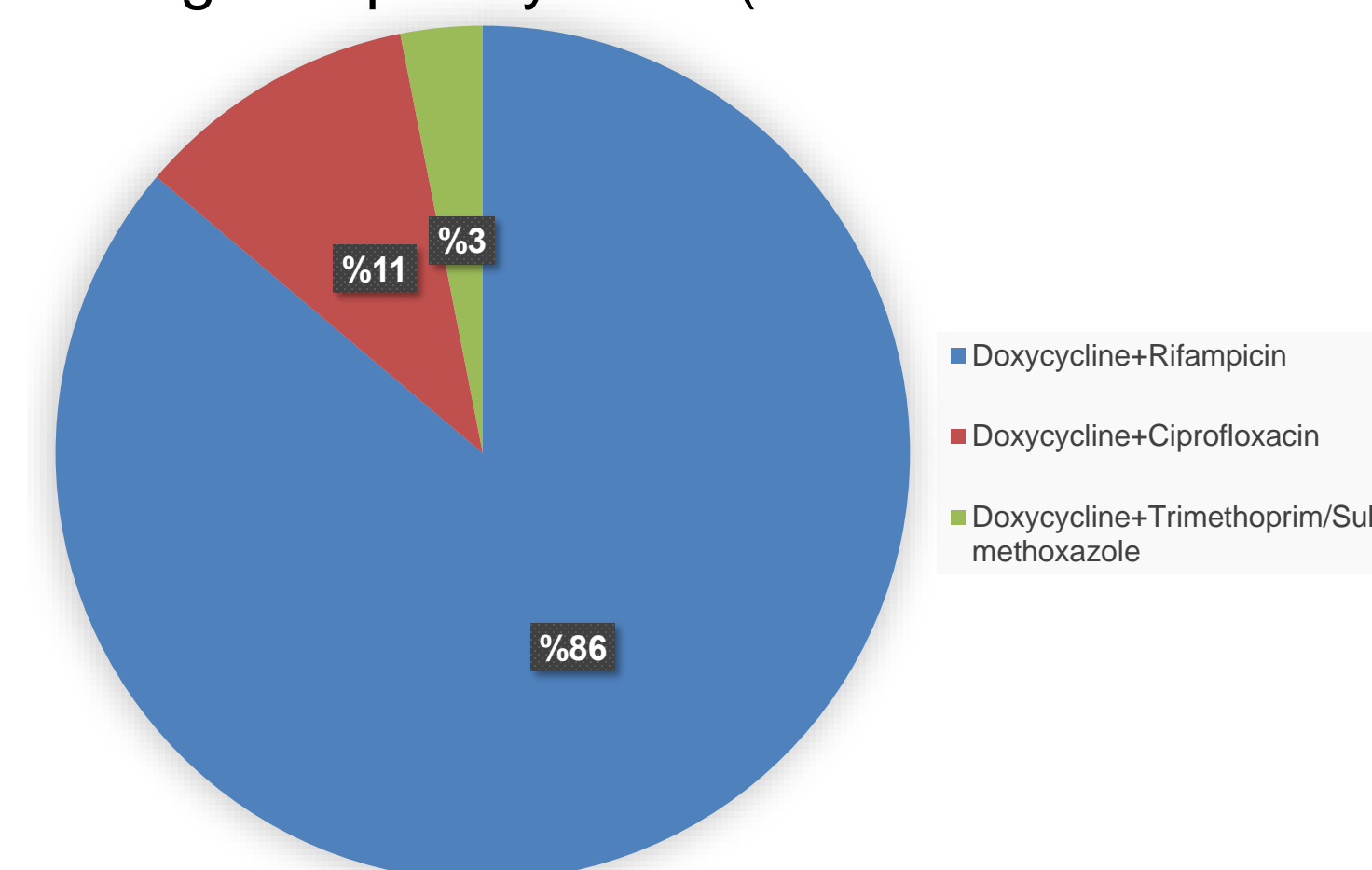


Table 3. Outcomes and side effects comparison of the two groups

Variables		Oral Rx	IV Rx	P-value
Follow up blood culture	Positive	Count	6	1
		Std.Res	0.9	- 1.1
	Negative	Count	49	35
		Std.Res	- 0.2	0.3
	Not done	Count	1	1
		Std.Res	- 0.2	0.2
Final outcomes	Cured	Count	51	36
		Std.Res	- 0.2	0.2
	Relapsed	Count	5	1
		Std.Res	0.7	- 0.9
Side effects	Transaminitis	Count	4	2
		Std.Res	0.2	- 0.3
	Vomiting	Count	3	3
		Std.Res	- 0.3	0.4
	Acute kidney injury	Count	0	1
		Std.Res	- 0.8	1

DISCUSSION/CONCLUSIONS

- Follow-up blood culture negativity after four weeks and clinical cure rate had no significant difference between the oral and IV antibiotic regimens
- Side effects including transaminitis, vomiting, and acute kidney injury were all reported in the oral and IV groups, with no statistically significant difference between the two groups
- Oral doxycycline-rifampicin and IV gentamicin-doxycycline-rifampicin (GDR) antimicrobial regimens have the same response rate in brucella bacteremia patients
- The study's limitations include its single-center design and small patients' population. A multi-centered, multi-ethnicity study is needed for a more elaborated therapeutic response.