Epidemiology and Treatment of Invasive *Bartonella* spp. Infections

Morgan Pizzuti, PharmD; Pamela Bailey, DO, MPH; Caroline Derrick, PharmD; Benjamin Albrecht, PharmD; Amy Carr, PharmD; Kerry Cleveland, MD; Elizabeth Covington, PharmD; Connor Deri, PharmD; Michael Gelfand, MD; Sarah Green, PharmD; Athena Hobbs, PharmD; Jillian Hayes, PharmD; Elizabeth Keil, PharmD; Jamie Kisgen, PharmD; Krutika Mediwala Hornback, PharmD; Jack Lukas, PharmD; Brian Raux, PharmD; Megan Seddon, PharmD; Alex D. Taylor, PharmD; Joseph Torrisi, PharmD; John Williamson, PharmD; P. Brandon Bookstaver, PharmD

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BACKGROUND

- Genomic testing methods (16/18S, PCR, and Karius©) have increased the ability to diagnose *Bartonella* spp. invasive infections.
- Current treatment recommendations are based on case series, aging data published prior to utilization of these techniques, with limited safety and effectiveness outcomes described.
- Primary objective: To describe the prevalence of invasive *Bartonella* spp. infections and treatment outcomes within the Southeastern U.S.

METHODS

Design
- Multicenter, retrospective, cohort study
- 10 individual sites collected data and analyzed by Prisma Health Richland
- Time period: January 1, 2014, through September 1, 2021

Inclusion
- Inclusion: Adults with invasive *Bartonella* spp. infection diagnosed by serology, culture, genomic testing, or diagnosis code
- Exclusion: Insufficient treatment data, not receiving antibiotics, retinitis as disseminated disease

Definitions
- Treatment failure (during treatment): admission, mortality within 30 days after end of therapy (EOT), therapy escalation, premature therapy discontinuation, regimen change, duration extension
- Treatment success: not meeting criteria for failure

CONTRIBUTORS

RESULTS

Figure 1. Screening

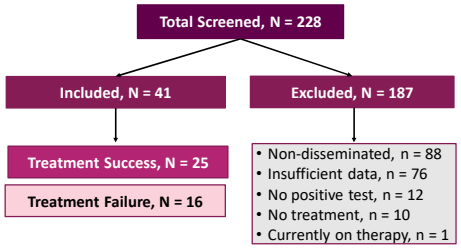

Table 1. Baseline Characteristics

Characteristic	Total (N =41)	Success (N = 25)	Failure (N = 16)
Males, n (%)	25 (61.0)	16 (64.0)	9 (56.3)
Caucasian, n (%)	28 (68.3)	15 (60.0)	13 (81.3)
Age, mean (SD)	50 (14.4)	50 (14.4)	54 (15.5)
CCI*, mean (SD)	3.5 (2.1)	3.9 (2.3)	2.9 (1.6)
Animal Exposure, n (%)	25 (61.0)	13 (52.0)	12 (75.0)

CCI*: Charlson Comorbidity Index

Table 2. *Bartonella spp.* Detected

Bartonella spp., n (%)	Total (N = 41)
B. henselae	26 (63.4)
Bartonella spp. co-infection	14 (34.1)
B. quintana	1 (2.4)

Figure 2. Genomic Testing

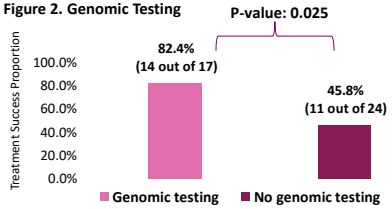

Table 3. Diagnostics

Diagnostics, n (%)	Total (N = 41)	Success (N = 25)	Failure (N = 16)
Serology	34 (82.9)	19 (76.0)	15 (93.8)
Culture	2 (4.9)	0 (0)	2 (12.5)
Any genomic testing*	17 (41.5)	14 (56.0)	3 (18.8)
PCR	10 (58.8)	8 (57.1)	2 (66.7)
Karius©	8 (47.1)	7 (50.0)	1 (33.3)
16/18S	2 (11.8)	2 (14.3)	0 (0)

Genomic testing defined as at least one of the following: PCR, Karius©, or 16/18S

Figure 3. Dissemination Type

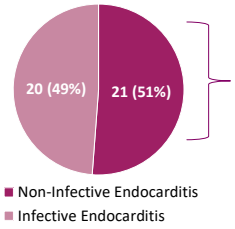

Table 4. Non-IE Dissemination Type

Site	Total (N = 21)
Liver	7 (33.3)
LN	6 (28.6)
Eyes	5 (23.8)
Brain	3 (14.3)
Spleen	3 (14.3)
Skin	3 (14.3)
Blood	2 (9.5)
Other	4 (19.0)

- Multiple sites possible
- LN = lymph nodes

Table 5. Treatment Regimens

Regimen, n (%)	Total (N = 41)
DOX/RIF	17 (41.5)
DOX/GEN	5 (12.2)
DOX/CRO/GENT	4 (9.8)
DOX	4 (9.8)
DOX/CRO	3 (7.3)
DOX/AZM	3 (7.3)
Other	5 (12.2)
DOX = doxycycline, RIF = rifampin, GEN = gentamicin, CRO = ceftriaxone, AZM = azithromycin	
Duration of therapy in days, median (IQR)	**66 (66)**

Table 6. Treatment Failure Reasons

Failure, n (%)	Total (N = 16)
Therapy escalation	5 (31.3)
Therapy discontinued (ADE)	5 (31.3)
Admission during treatment	3 (18.8)
Mortality during treatment	3 (18.8)
Duration Extension	2 (12.5)
Premature therapy discontinuation	2 (12.5)

ADE = adverse drug event

CONCLUSIONS

- Largest cohort of invasive *Bartonella* spp. infections in the United States
- **PCR, Karius©, and 16/18S** testing is beneficial to obtain timely diagnoses
- Most utilized treatment regimen was **doxycycline with rifampin in 41.5% of patients** for a duration of ~9 weeks

REFERENCES

1. Raoult D, Fournier PE, Vandenesch F, et al. *Arch Intern Med*. 2003;163(2):226-230. doi:10.1001/archinte.163.2.226
2. Baddour LM, Wilson WR, Bayer AS, et al. *Circulation*. 2018 Jul 31;138(5):e78-e79]. doi:10.1161/CIR.0000000000000296
3. Fournier PE, Thuny F, Richet H, et al. *Clin Infect Dis*. 2010;51(2):131-140. doi:10.1086/653675

DISCLOSURES

- No funding was provided for this study
- CD: Janssen Pharmaceuticals