



Clinical Experience with *Coxiella burnetii* PCR

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Abstract

Background:

C. burnetii PCR, though not widely available, can be used in the diagnosis of Q fever. We have offered *C. burnetii* PCR to Mayo Clinic and Mayo Medical Laboratories patients since July 2013.

Methods:

We reviewed the clinical and laboratory data of those patients whose clinical specimens tested positive for *C. burnetii* PCR from July 2013 to May 2016.

Results:

A total of 1,065 *C. burnetii* PCR tests were performed. Among these, 625 (59%) were performed on serum, 293 (27%) on whole blood and 147 (14%) on other specimen sources. The test resulted positive in 10 (0.9%) samples from 8 patients. Most patients with positive results were men (7/8), and were older than 40 years (7/8). Q fever antibody titers were positive in all seven patients from whom they were available. Fever was the most frequently reported symptom. The clinical syndromes included endocarditis (5), vertebral osteomyelitis/epidural and psoas abscess (1), aortic endovascular graft infection/psoas abscess (1), and fever of unknown origin (1). All but two patients had exposures to cattle/farms.

Conclusion:

In our experience, *C. burnetii* PCR is rarely positive, but, when positive, it is associated with clinically significant infection and positive serologic results.

Background

Q fever, a worldwide zoonotic infection caused by *Coxiella burnetii*, has been associated with acute and chronic infection with varied clinical presentations.

C. burnetii PCR, though not widely available, may be used in the diagnosis of Q fever. We have offered *C. burnetii* PCR to Mayo Clinic and Mayo Medical Laboratories patients since July 2013.

Objectives

Review the clinical and demographic data of patients whose clinical specimens tested positive by *C. burnetii* PCR from July 2013 to May 2016 in our laboratory.

Methods

We reviewed the clinical and laboratory data of those patients whose clinical specimens tested positive for *C. burnetii* PCR from July 2013 to May 2016. Demographic and clinical data for Mayo Clinic patients were obtained by review of electronic medical records of these patients. For non-Mayo Clinic patients, information was obtained by contacting the ordering provider.

Results

Clinical and laboratory data of patients who tested positive by *C. burnetii* PCR

No.	Age	Sex	Comorbidities	Clinical syndromes	Specimens positive by <i>C. burnetii</i> PCR	Phase 1 IgG	Phase 1 IgM	Phase 2 IgG	Phase 2 IgM
1.	57	M	None	Vertebral osteomyelitis, epidural abscess, right psoas abscess	Lumbar vertebrae	1:2048	1:32	1:1024	Unknown
2.	62	M	Rheumatoid arthritis	Chronic Q fever (fever, lethargy)	Blood	1:32768	1:2048	1:32768	1:2048
3.	71	M	Aortic aneurysm repair	Psoas abscess; infected aortic endovascular graft	Psoas abscess; aortic endovascular graft #1 and #2	<1:16	1:256	1:8192	<1:16
4.	21	M	Tetralogy of Fallot	Probable Q fever endocarditis (thickened pulmonic valve)	Serum	>1:32768	<1:16	>1:32768	<1:16
5.	43	M	Bicuspid aortic valve	Aortic valve endocarditis	Aortic valve	1:16384	1:1024	1:4096	<1:16
6.	63	M	Aortic valve replacement	Prosthetic aortic valve endocarditis	Heart/perivalvular tissue	>1:800	>1:800	>1:800	>1:20,000
7.	57	M	Glomerulonephritis, aortic valve replacement	Prosthetic aortic valve endocarditis.	Aortic tissue			Positive	
8.	44	F	Unknown		Mitral valve	Unknown			

Results

- 1,065 *C. burnetii* PCR tests were performed.
- Among these, 625 (59%) were performed on serum, 293 (27%) on whole blood and 147 (14%) on other specimen sources.
- Test resulted positive in 10 (0.9%) samples from 8 patients.
- Most patients with positive results were men (7/8), and were older than 40 years (7/8).
- Q fever antibody titers were positive in all seven patients from whom they were available.
- Fever was the most frequently reported symptom.
- Clinical syndromes included endocarditis (5), vertebral osteomyelitis/epidural and psoas abscess (1), aortic endovascular graft infection/psoas abscess (1), and fever of unknown origin (1).
- All but two patients had exposures to cattle/farms.

Conclusions

In our experience, *C. burnetii* PCR is rarely positive, but, when positive, it is associated with clinically significant infection and positive serologic results.

References

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Specimens tested by *Coxiella* PCR, July 2013 to May 2016

