

VSR 2024: Thieves Market Case

Alyssa Bosso, MD & Bradley Clemens, DO
Faculty Mentor: Donald Kimpel, MD

University of Virginia
Department of Internal Medicine
Division of Clinical Rheumatology

History of Present Illness

25-year-old male presenting with fevers

- Duration of 2-3 weeks
- Associated with arthralgias, fatigue, neck stiffness, headache
- Found to have mild transaminitis and pancytopenia
- Underwent lumbar puncture
 - LP unremarkable
- Treated empirically for a suspected tick-borne illness with doxycycline
 - Symptoms improved!
 - Work-up for Lyme, Ehrlichia, Rocky Mountain Spotted Fever, and Anaplasmosis subsequently returned negative

History of Present Illness (continued)

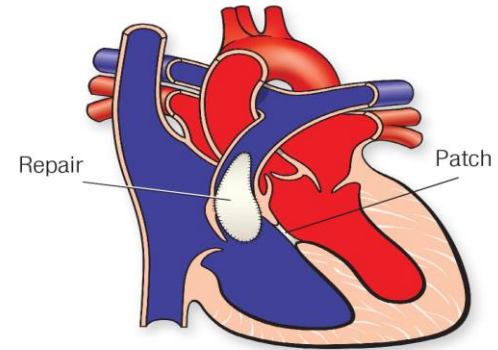
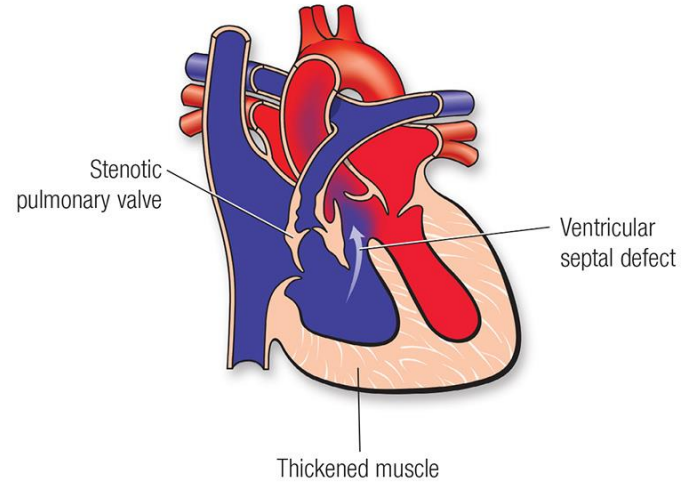
5 months later

- Presents again with recurrent fevers
- Additional symptoms:
 - Fatigue
 - 15 lbs unintentional weight loss over 1 month
 - Arthralgias of the hands and feet
 - Intermittent rash on wrists and lower extremities

Past History

- Tetralogy of Fallot
 - s/p repair with RV-PA conduit
 - s/p pulmonary valve replacement with a pulmonary allograft and left pulmonary arterioplasty (2015)

Tetralogy of Fallot



What additional historical questions
for the patient do you have?

Physical Exam

Vitals: BP 102/59 Pulse 77 RR 18 SpO2 98% on RA BMI 23.06 kg/m²

General: No acute distress

Eyes: EOMI, no icterus or injection

HENT: No oral ulcers, clear oropharynx, salivary pool intact, no nasal crusting

Heart: RRR, **holosystolic murmur** present, normal S1, **split S2**

Lungs: CTA bilaterally

Abdomen: Soft, non-tender. **Splenomegaly** present.

Extremities: No edema

Skin: No rashes

MSK: No synovitis in the upper and lower extremities

Neuro: Alert and oriented x3. CN 2-12 intact. No sensory deficits. Strength intact in the upper and lower extremities.



Patient provided photographs of leg rash

Basic labs

Sodium	127	AST	25	Leukocytes	3.3	ESR	116
Potassium	4.7	ALT	20	Hemoglobin	7.1	CRP	90.6 (mg/dL)
Chloride	96	Alk phos	42	MCV	72.4	UA	Large blood Protein:Cr ratio 1.62
CO2	17	TBili	0.5	Platelets	157		
BUN	92	Total protein	7.8	Neutrophils %	70.4		
Creatinine	10.92	Albumin	2.9	Lymphocytes %	19.4		
Glucose	101			Monocytes %	9.2		
Calcium	8.2			Eosinophils %	0.2		
				Basophils %	0.8		

What additional diagnostic tests
would you like to pursue?

Additional Laboratory Evaluation

ANA	1:80 speckled	DAT	Negative
C3	<40	APLS ab	Negative
C4	18	SPEP	Polyclonal hyper-IgG
RF	109		
CCP	Negative		
MPO	Negative		
PR3	100		
GBM Ab	Negative		
Cryoglobulin	Type III cryoglobulinemia		

HBV, Hep C, HIV	Negative
Quant gold	Negative
RMSF	IgG 1:1024 IgM negative
Ehrlichia	IgG 1:1024 IgM negative
Lyme	Negative
Anaplasma	IgG 1:320 IgM negative
Fungitell	Negative
ASO	Negative
Anti-DNAse	Negative
Blood cultures	Negative

Renal biopsy

Kidney, right, biopsy:

Necrotizing and Crescentic Glomerulonephritis, Immune Complex-Type

Immunofluorescence: Global granular staining for **IgG, IgM, C3, C1q, kappa, and lambda**

Echocardiography

Transthoracic

Peak pulmonary artery conduit/valve gradient = 27mmHg with no valve regurgitation

RV mildly enlarged and hypertrophied with qualitatively normal systolic function

TR, mild

Right ventricular systolic pressure is 46 mmHg plus the right atrial pressure.

No residual VSD

Normal LV size and function

No evidence of endocarditis, TTE does not rule out vegetations

Transesophageal

Conduit valve thickened and echobright with peak gradient = 50 mmHg and trivial valve regurgitation

RV mildly enlarged and hypertrophied with qualitatively normal systolic function

TR, mild

No residual VSD

Normal LV size and function

No evidence of endocarditis

A diagnostic test was performed
and confirmed the diagnosis

Bartonella Henselae **IgG 1:32786**
IgM 1:32

Bartonella Quintana **IgG 1:1024**
IgM <1:16

Patient's Course

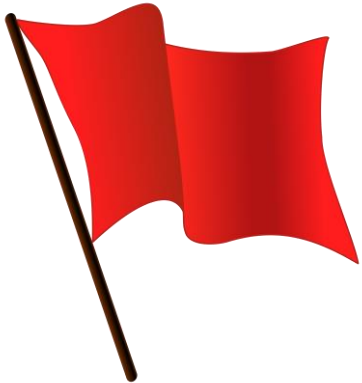
- Treated with a 12 week course of doxycycline and 6 week course of rifampin for presumed ***Bartonella* infective endocarditis**
- Course complicated by PRES and seizures due to uremia
- Later, he developed new onset biventricular heart failure due to progressive dysfunction of the bioprosthetic pulmonic valve
- Requires hemodialysis for renal failure
- Patient has implemented claw guards for his cat

Bartonellosis

- **Gram-negative** facultative intracellular bacterium
- *B. henselae* ~ Cat-scratch disease; *B. quintana* ~ Trench fever;
B. bacilliformis ~ Carrion's disease
- Fastidious organisms
 - Important cause of **blood culture-negative** infective endocarditis (BCNE) in humans
 - Insidious, non-specific symptoms; often with cytopenias
 - Tends to affect patients with prosthetic valves + epidemiologic exposure
- Cats are considered main reservoir for *B. henselae*, but can carry all
 - Transmitted to human from cat scratch or through cat flea
- Detection
 - Direct methods: culture, PCR (serum or tissue), special stains
 - Indirect methods: serologies

Bartonella endocarditis-induced vasculitis: a “copycat”

- Most commonly mimics renal-predominant PR3-ANCA vasculitis
- Prevalence of ANCA positivity (+PR3) as high as 60%
 - Pathogenicity of ANCA in this context is debated
- Also can cause secondary, type III cryoglobulinemic vasculitis



Consider infectious origin when evaluating
glomerulonephritis with ANCA positivity
*especially if renal biopsy shows immune-complex or
complement deposition*

References

Babiker A, El Hag MI, Perez C. Bartonella Infectious Endocarditis Associated With Cryoglobulinemia and Multifocal Proliferative Glomerulonephritis. *Open Forum Infect Dis*. 2018 Jul 27;5(8):ofy186. doi: 10.1093/ofid/ofy186.

Beydon M, Rodriguez C, Karras A, Cez A, Rafat C, Jourde-Chiche N, Fain O, Philipponnet C, Puéchal X, Dossier A, Dupin N, Levy D, Aureau I, Guillevin L, Terrier B; French Vasculitis Study Group (FVSG). Bartonella and Coxiella infections presenting as systemic vasculitis: case series and review of literature. *Rheumatology (Oxford)*. 2022 May 30;61(6):2609-2618. doi: 10.1093/rheumatology/keab691.

Eloy E Ordaya, Omar M Abu Saleh, Maryam Mahmood, "Let the Cat Out of the Heart": Clinical Characteristics of Patients Presenting With Blood Culture-Negative Endocarditis Due to *Bartonella* Species, *Open Forum Infectious Diseases*, Volume 10, Issue 7, July 2023, <https://doi.org/10.1093/ofid/ofad293>

Vivekanantham A, Patel R, Jenkins P, Cleary G, Porter D, Khawaja F, McCarthy E. A "cat"-astrophic case of Bartonella infective endocarditis causing secondary cryoglobulinemia: a case report. *BMC Rheumatol*. 2022 Mar 25;6(1):16. doi: 10.1186/s41927-022-00248-0.

Questions?



Turtle



Meiomi