

Rare Case of Gemella Infective Endocarditis, Discitis, and Osteomyelitis

Marwah Ahmad, D.O.¹, Soo Yeon Kim, M.D.¹, Kara Asbury, M.D.¹

¹HonorHealth Internal Medicine Residency Program / Thompson Peak Campus, 7400 E. Thompson Peak Pkwy., Scottsdale, AZ 85255

CASE HISTORY

A 74-year-old female with a past medical history of total right hip arthroplasty in 2017, chronic back pain with sciatica, stage III pressure injury of the bilateral buttocks, vaginal prolapse status post repair, and a systolic murmur initially found 06/2021, who presented to the ER on 07/2022 after a non-syncopal ground level fall resulting in worsening low back pain. She reported unintentional weight loss over the past several months, increasing lower extremity edema requiring Lasix, a sacral back injection for chronic back pain 7 months prior, and a dental cleaning 2 weeks prior to admission. She denied any loss of consciousness, syncope, musculoskeletal, or neurological complaints.

PHYSICAL EXAM

- Temperature 100.3°F, HR 118 bpm, RR 20, and BP 95/66.
- Physical examination revealed normal S1, S2, 3/6 holosystolic blowing murmur, no rubs or gallops, 2+ lower extremity edema. Lungs were clear. There were no peripheral stigmata of endocarditis involving her conjunctiva, hands, or feet. CN intact. No focal motor or sensory deficits.

LABS

ADMISSION LAB VALUES		
Component	Value	Ref Range
WBC	7.2	4.0 - 10.9 10 ³ /μL
Hgb	8.4	12.0 - 16.0 g/dL
Sodium	123	136 - 144 mmol/L
Potassium	4.3	3.6 - 5.0 mmol/L
Creatinine	0.6	0.4 - 1.0 mg/dL
BNP	109	0 - 100 pg/mL
Troponin	0.03	0.00 - 0.03 mmol/L
TSH	1.091	0.450 - 5.330 mg/dL
Lactate	2.1	0.5 - 2.0 mmol/L

IMAGING

- CXR: No acute cardiopulmonary disease
- XR hip: No fracture or dislocation
- CT brain: No CT evidence of acute intracranial abnormality
- CT lumbar: L5-S1 disc space widening with irregularity of the endplates. A discitis at the level cannot be excluded. No acute fracture.
- MR lumbar w contrast: L5-S1 discitis osteomyelitis.
- MR thoracic w contrast: Mild T6-7 prevertebral enhancement possibly representing early osteomyelitis.
- MR cervical w contrast: No osteomyelitis or discitis.
- US venous bilateral legs: No DVT

HOSPITAL COURSE

- Day 0:** Differential diagnoses remains broad – SIRS, sepsis, dehydration, SIADH, etc. Fluid resuscitation initiated. Blood and urine cultures obtained.
- Day 1:** Patient remained afebrile in the last 24 hours. Blood cultures growing Gram-Positive Cocci, Gemella bergeri. IV Vancomycin treatment initiated. TTE demonstrates moderate to severe mitral regurgitation
- Day 2:** Day 2 of vancomycin.
- Day 3:** MRI brain revealing small acute infarcts in the left cerebellum.
- Day 4:** TEE revealing a 1.74x2cm mobile vegetation in the mitral valve with severe mitral valve regurgitation. EF 65%. Endocarditis likely source of embolic stroke.
- Day 5:** Day 5 of vancomycin and repeat cultures on are preliminarily negative.
- Day 6:** Cardiothoracic surgery consulted for mitral valve replacement
- Day 8:** Gemella bergeri susceptible to penicillin. Antibiotic treatment switched from vancomycin to ceftriaxone and gentamicin.
- Day 12:** Open heart mitral valve replacement
- Day 18:** Patient discharged from hospital. Patient received 6 weeks of IV ceftriaxone and 2 weeks of IV gentamicin.

DISCUSSION AND CONCLUSION

Gemella bergeri Endocarditis

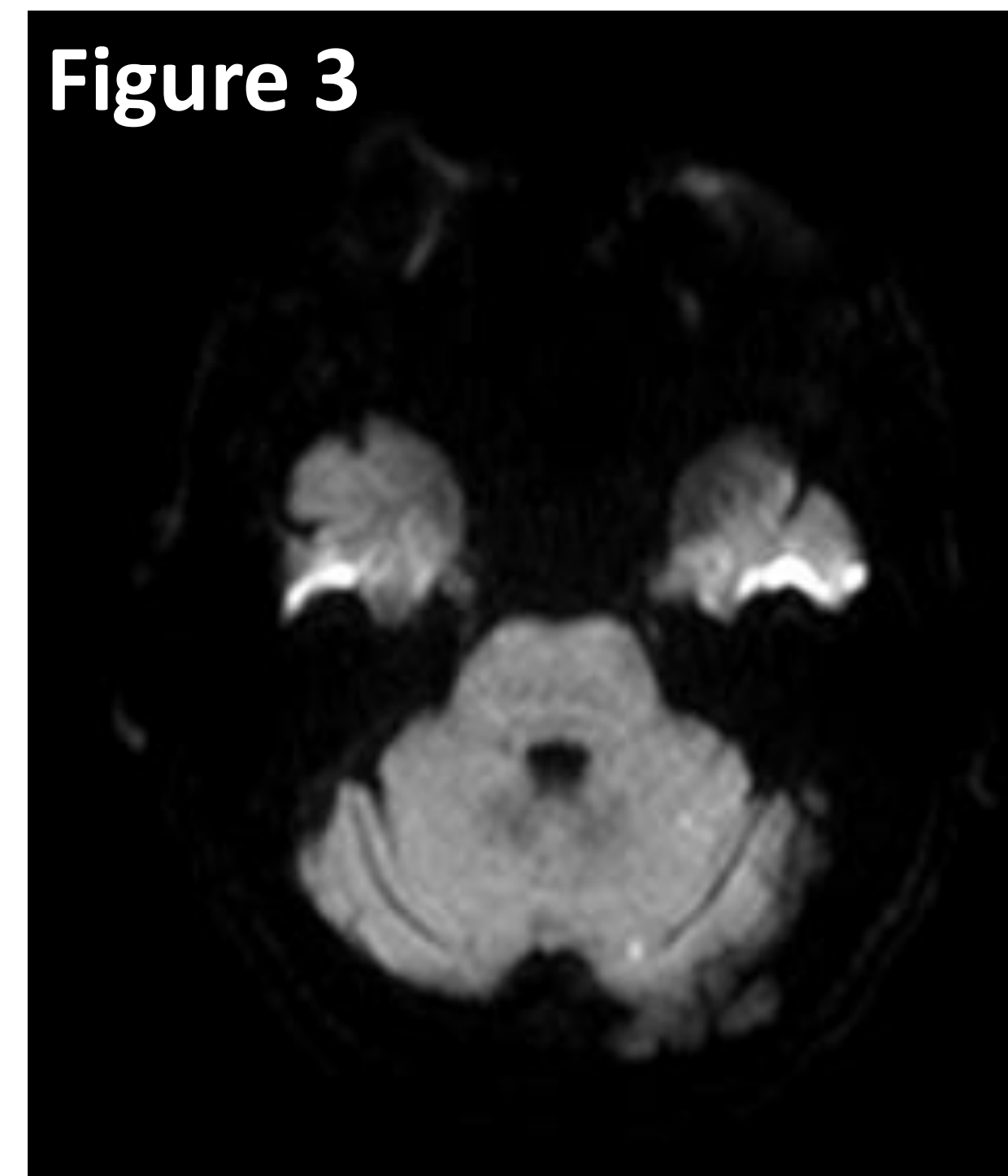
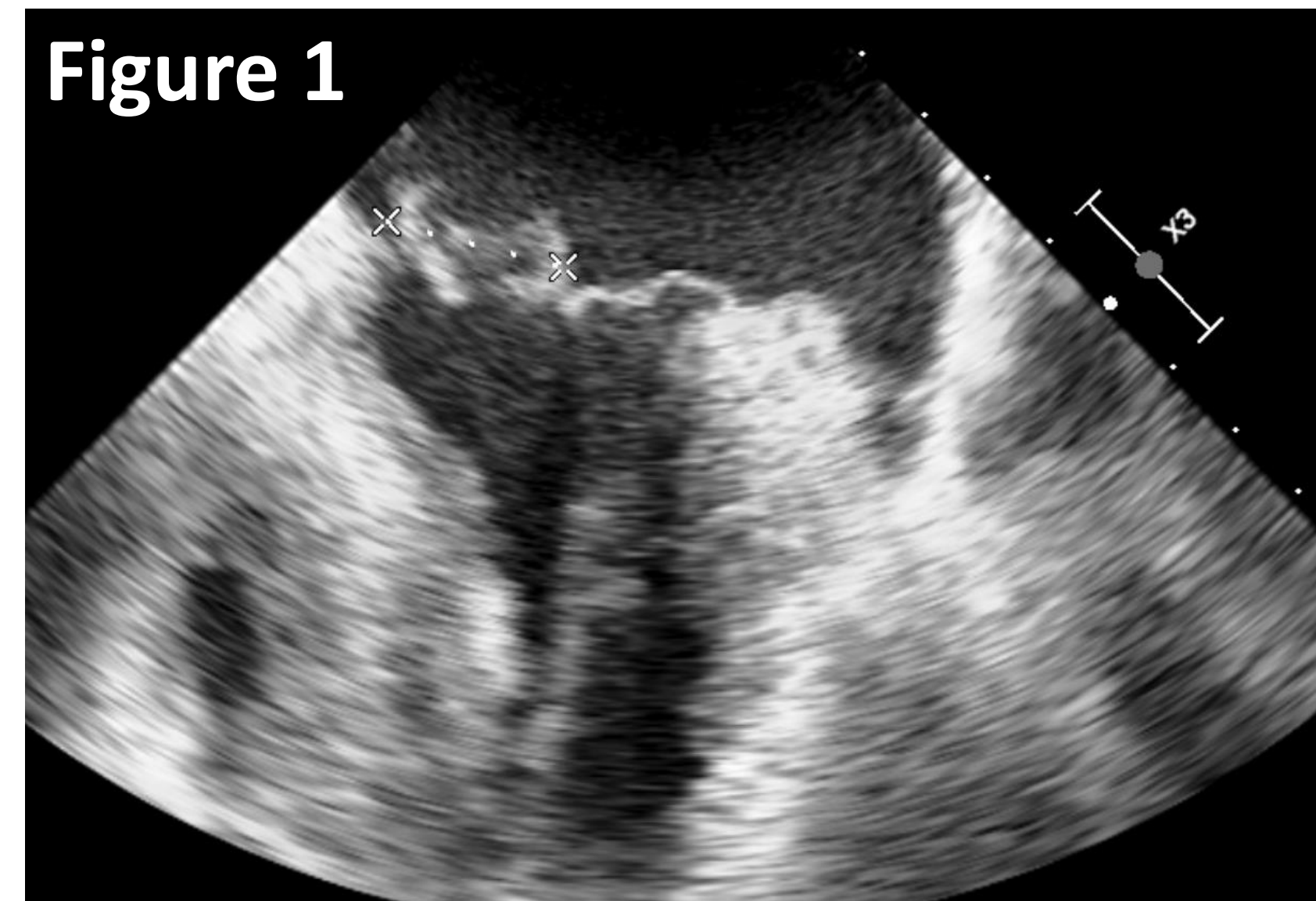


Figure 1 & 2. TEE showing mobile vegetation in the mitral valve

Figure 3. Axial diffusion weighted MR of brain revealing a small foci of restricted diffusion in the left superior cerebellum

Gemella species are anaerobic, catalase negative, nonmotile, gram-positive cocci that are found in human mucus membranes particularly the gastrointestinal tract, oral cavity, and respiratory tracts (1). *Gemella* spp. morphologically resemble streptococci and Neisseria-like diplococci. They are difficult to identify as they often decolorize on gram stain, causing variability in characterization, and necessitating the use of 16S rRNA gene amplification systems for infectious identification (2-4). *G. haemolysans*, *G. morbillosum*, and *G. sanguinis* have been implicated in several infections such as lung abscesses, dental infections, pyelonephritis, meningitis, and endocarditis, with *G. haemolysans* as the most common *Gemella* spp. in endocarditis (1,5). A newer *Gemella* spp., *G.bergeri*, has rarely been the culprit bacteria in human endocarditis or osteomyelitis.

Gemella species are commensal bacteria that are rare causes of opportunistic infections in adults with risk factors including, diabetes, structural heart abnormalities, and poor dentition (6-10). There are several reports of *G. haemolysans* and *G. morbillosum* endocarditis [8, 9]. However, *G. bergeri* endocarditis or osteomyelitis are uncommon, and concurrent infections are even more scarce - only one other case of simultaneous *Gemella bergeri* endocarditis and osteomyelitis has been reported in the literature according to Pubmed database [10]. Our patient had underlying structural heart disease, chronic back pain, and a recent dental procedure as her main risk factors. Patient was successfully treated with mitral valve replacement and 6 weeks of targeted antimicrobials.

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