CLINICAL VIGNETTE

Gemella Endocarditis

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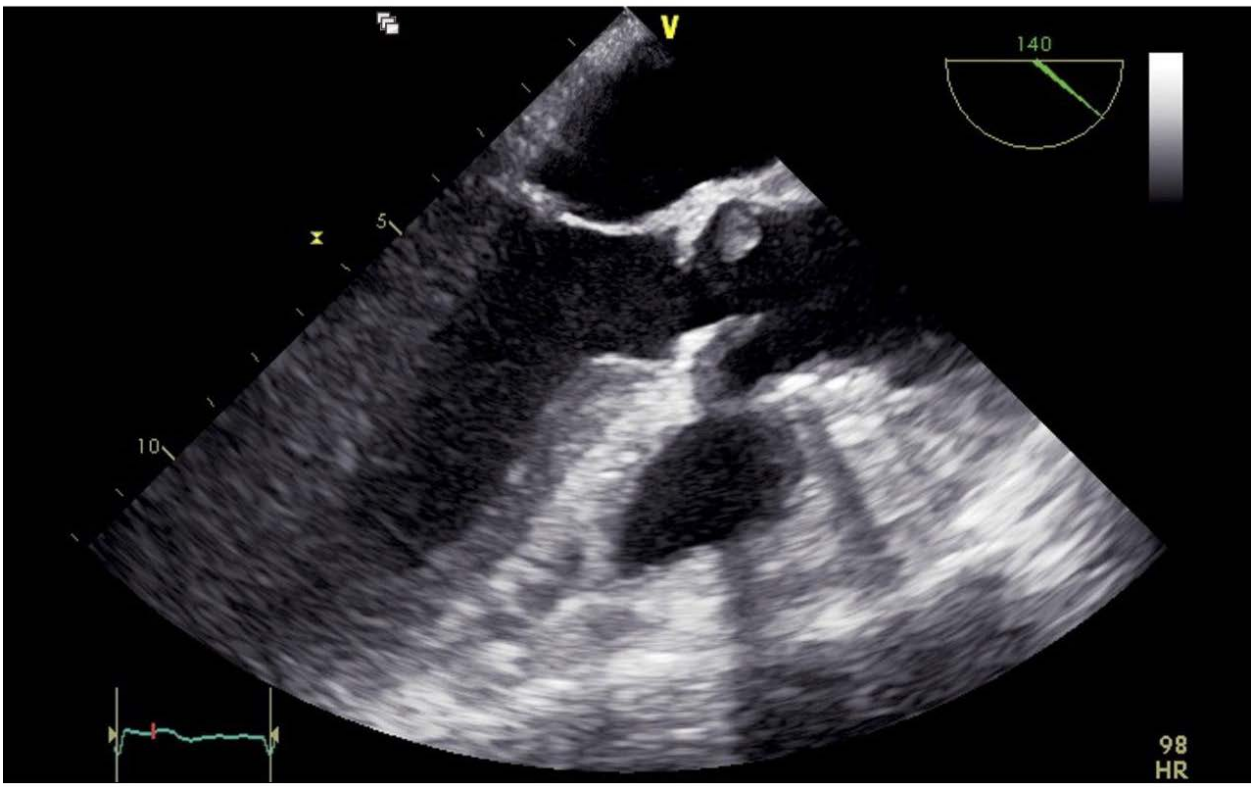
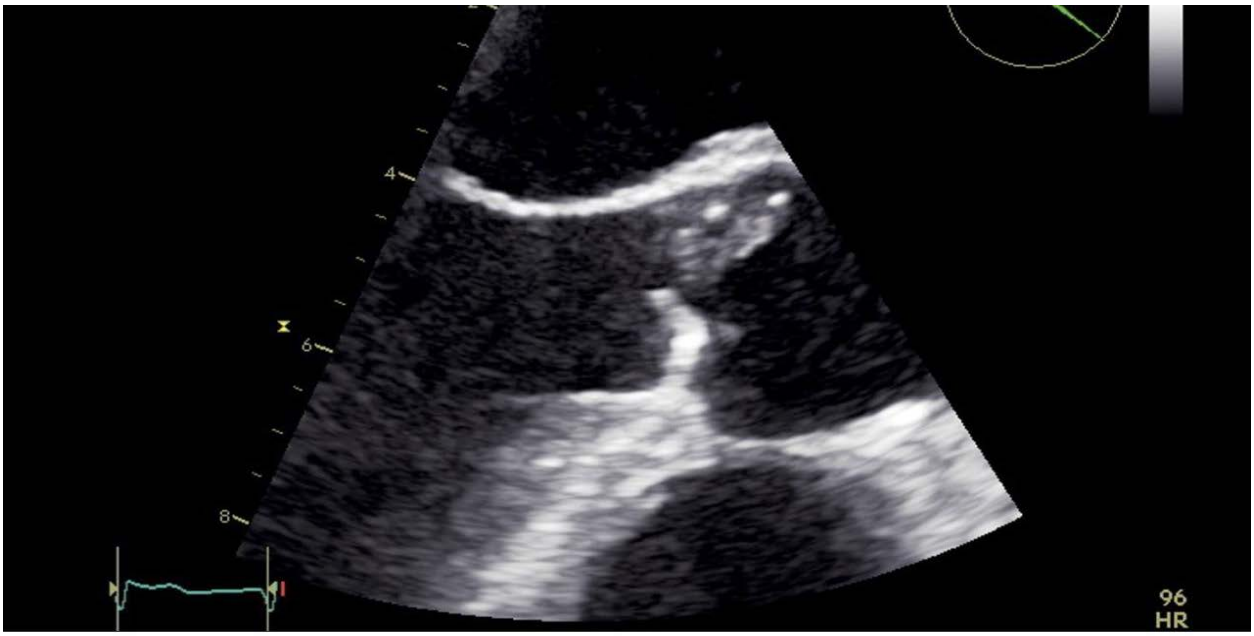
Case

A 73-year-old male with minimal past medical history was directed to the hospital due to abnormal laboratory studies. The patient had several months of unexplained weight loss, which was extensively evaluated with labs and CT imaging. Labs drawn on the day of admission showed new pancytopenia with WBC 1,700 (4,000 - 11,000 /uL), hemoglobin 7.6 (13.5 - 17.7 g/ dL) with MCV of 82 (82 - 98 fL) and platelets of 129 (150 - 400 10^3/uL). The patient also had new renal failure with creatinine of 5.40 (0.55 - 1.02 mg/dL). He was referred to the hospital and admitted for further management.

Physical examination was notable for a chronically ill appearing male in no acute distress. Vitals included low-grade fever of 99.0 and sinus tachycardia to the low 100s. Blood pressure was 144/62. Auscultation revealed a grade 3/6 diastolic murmur heard best at the left lower sternal border. Additional laboratory studies included markedly elevated C-reactive protein 54.9 (<10 mg/L) and erythrocyte sedimentation rate 28 (0-20 mm/hr). Serum complement levels were low, with C3 57 (82 - 167 mg/dL) and C4 of 8 (12 - 38 mg/dL). Urinalysis was significant for microscopic hematuria and proteinuria. Blood cultures were drawn and returned the next day positive for gemella morbillorum in 4/4 bottles. Transesophageal Echocardiogram demonstrated a large mobile vegetation attached to the right coronary cusp, with associated moderate aortic regurgitation (see images below).





The patient was treated with IV ceftriaxone for gemella AV endocarditis with associated glomerulonephritis. Renal biopsy was considered, given clinical suspicion for glomerulonephritis, but was not obtained as his renal function improved. He improved and was discharged to home with a PICC line for a total of 6 weeks parenteral antibiotics. He was readmitted several months later for a CHF exacerbation from worsening aortic valve disease.

Discussion

Gemella bacteria are gram positive organisms commonly found in the mucous membranes of the human upper respiratory and digestive tracts.[1] They have rarely been implicated in serious infections including endocarditis. There are only a handful of case reports of endocarditis from gemella species.[1-3] While the pathogenicity of this commonly found mucosal organism remains unclear, risk factors for severe infections including endocarditis include older age men with preexisting valvular disease and/or dental disease, or underlying colorectal malignancy.[3] Of the gemella genus, the morbillorum species is the most associated with bacteremia and endocarditis.

This patient demonstrated a more subacute illness with weight loss and progressive pancytopenia and renal failure, which may be secondary to the low virulence of the pathogen.

The treatment guidelines are similar for streptococcal endocarditis, as gemella species tend to be responsive and sensitive to penicillin.[1] This patient also demonstrated suspected immunological complications of endocarditis including glomerulonephritis, and pancytopenia from bone marrow suppression. Both improved with antibiotic treatment. He did not demonstrate any clear evidence of embolic phenomena. Unfortunately, despite extended treatment with IV antibiotics, the patient eventually required aortic valve replacement due to worsening valvular function. He regained full function after successful TAVR.

REFERENCES

1. **Steinberger J, Mohamed M, Sudhakar R**. Gemella morbillorum infective endocarditis: a systematic review. *Circulation*. 2020 Nov 17;142(S3):A16259. Available at: https://www.ahajournals.org/doi/10.1161/circ.142.suppl_3.16259.
2. **Stroup JS, Bransteitter BA, Reust R**. Infective endocarditis caused by Gemella species. *Infectious Diseases in Clinical Practice*. 2007;*15*(3):203-205. Available at: https://doi.org/10.1097/01.idc.0000269918. 02725.b4
3. **Youssef D, Youssef I, Marroush TS, Sharma M**. Gemella endocarditis: A case report and a review of the literature. *Avicenna J Med*. 2019 Oct 3;9(4):164-168. doi: 10.4103/ajm.AJM_3_19. PMID: 31903393; PMCID: PMC6796301.