

Silent Aortic Valve Perforation in a Patient with *S. Salivarius* Infective Endocarditis

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Abstract:

Streptococcus salivarius is a commensal bacterium of the oral and gut flora and is rarely implicated in infective endocarditis (IE). Herein, we present a case of a 69-year-old male who presented with fatigue, weight loss, and no fever, ultimately diagnosed with IE complicated by severe aortic regurgitation. Initial investigations revealed leukocytosis, anemia, hyperkalemia, and elevated troponins. Imaging studies revealed bilateral common iliac artery aneurysms and atrophic kidneys with renal cysts. Transthoracic and transesophageal echocardiograms revealed mobile aortic vegetation, severe aortic regurgitation, and valve perforation. Blood cultures identified *Streptococcus salivarius*/vestibularis. The patient underwent aortic valve replacement, resulting in clinical improvement and negative blood cultures. The discussion highlights the rarity of *S. salivarius* causing IE and emphasizes the challenges in management, including the need for timely surgical intervention and multidisciplinary care in complicated IE cases. This case underscores the importance of considering atypical pathogens in IE and the complexities involved in its diagnosis and management. Further research is warranted to elucidate such cases' clinical implications and optimal management strategies.

Key words: infective endocarditis; streptococcus salivarius; aortic regurgitation

Introduction

Streptococcus Salivarius is a commensal flora of the mouth and gut. It rarely causes infective endocarditis [IE], and there are only a handful of reported cases of *S. salivarius* causing IE. Frequent cardiac complications of infective endocarditis are cardiac abscesses, myocarditis, and periannular extension of infection. On the other hand, rare complications include valve perforation, cuspal aneurysms [1] etcetera. Talking about valve perforations secondary to infective endocarditis Mitral valve perforation is more common in these instances than aortic valve perforation. We present a patient who presented to the ED for fatigue and weight loss with no fever and ended up being diagnosed with IE-complicated by severe aortic regurgitation

Presentation and Physical Examination:

A 69-year-old male presented to the emergency department for fatigue that had been ongoing for about 2 weeks. He reports having lost about 40 pounds over the past month. Other associated symptoms include

decreased appetite and intermittent blood-tinged cough. He did not report fever, night sweats, chills, nausea or vomiting.

Vital signs upon admission were as follows: HR 87, RR 17 BP 100/38. Oxygen Saturation of 96% on room air.

Medical History

Hypertension

Tricuspid valve Infective Endocarditis

Hyperlipidemia

End-stage renal disease on hemodialysis

Management

Investigations in the ED showed

WBC	8.0 x10 ⁹ /L
Hemoglobin	9.2g/dl
Hematocrit	28.7 %
Sodium	135mmol/l
Potassium	6.0mmol/l
Anion Gap	19
Creatinine	17.62 mg/dl
High sensitivity troponins	212 ng/L
Lactic acid	5.1 mmol/L

CXR (Figure 1) showed bibasilar subsegmental atelectasis.

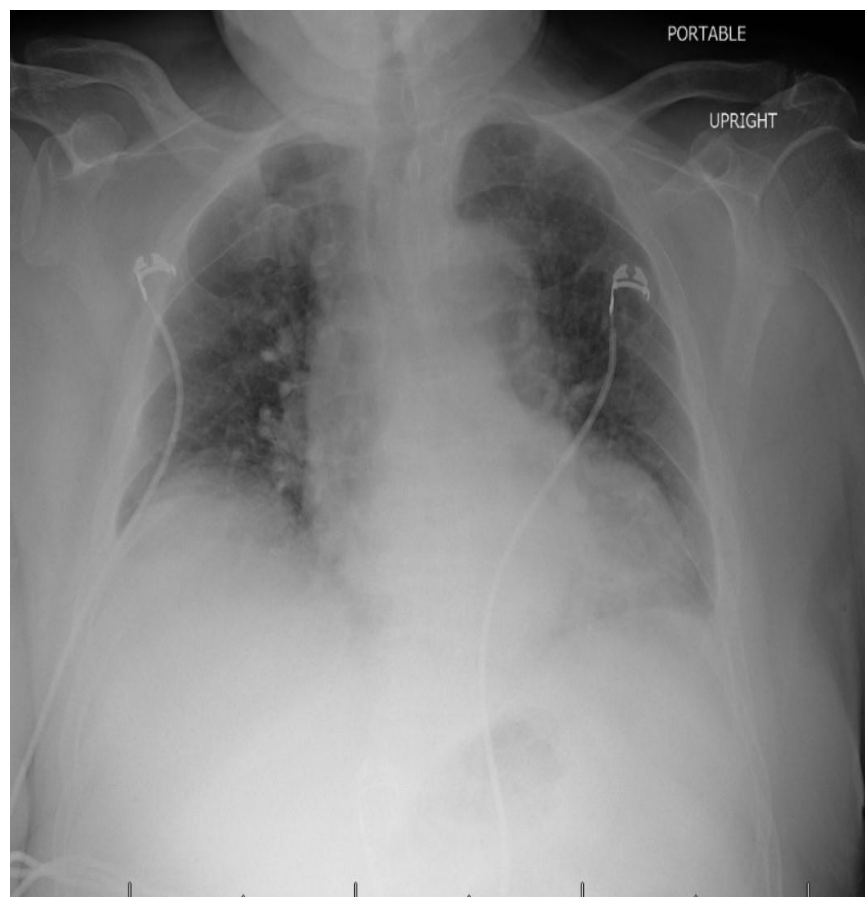


Figure 1: CXR showing bibasilar subsegmental atelectasis

CT abd/pelvis (Figure 2) showed b/l common iliac artery aneurysms(right 2.8cm, left 2.6cm), atrophic kidneys with b/l renal cysts, and a trace right pleural effusion.



Figure 2 : CT abdomen/pelvis showing a right iliac artery aneurysm that measures 3.1cm x 2.8cm

A transthoracic echocardiogram (Video 1) was done, and it showed moderate aortic regurgitation, a moderate-sized mobile density on the aortic valve with a peak instantaneous gradient across the aortic valve of 22.9mmHg, and a mean gradient across the aortic valve of 14mmHg.

Video link - [Transthoracic echo showing an aortic valve vegetation.](#)

With the findings on TTE, a TEE (Video 2) was completed, and it showed mobile aortic vegetation >1cm in size (1.7 x 0.35cm), severe aortic regurgitation with a regurgitant jet directed towards the anterior leaflet of the mitral valve, and perforation of the right coronary and non-coronary cusp.

Video 2 Link - <https://youtu.be/Aaq1ERgIzRE>

In the interim, the patient became febrile and hypotensive, and blood cultures returned positive for streptococcus salivarius/vesibularis. He was started on cefazolin, fluid resuscitation, and vasopressors, and repeat blood cultures were sent. Due to the left-sided infective endocarditis, severe aortic insufficiency, and the size of the vegetation, the patient was considered an appropriate candidate for cardiothoracic surgery. A coronary CT (Figure 5) was done before the surgery.

On Day 5 of hospitalization, the patient underwent a right mini-thoracotomy with removal of the aortic vegetation and aortic valve replacement with a 27mm Edwards Inspiris tissue valve.

Outcome

The patient was extubated on Day 5 post aortic valve replacement. Blood cultures were negative by Day 10 of hospitalization. After the last negative culture, the patient was scheduled to get six weeks of vancomycin. He was discharged to a rehab facility after 16 days of hospitalization.

Latest Follow-up

The patient was at the inpatient rehab facility for a total of 12 days, after which he was sent home.

Discussion

It is estimated that Infectious Endocarditis occurs in 15 per 100,000 individuals. Common risk factors include age above 60, male sex, poor dentition, Intravenous Drug Abuse, and valvular and structural heart conditions. Duke's criteria stratify the conditions to meet a definitive diagnosis of infective endocarditis, which includes two major or one major and three minor and five minor criteria [1].

The microbiology etiology of Infective Endocarditis agents are streptococci, enterococci, staphylococci, and lesser common gram-negative HACEK Organisms, which include *Haemophilus*, *Aggregatibacter*, *Cardiobacterium*, *Eikenella*, and *Kingella*. However, the incidence rate of *S.sallivus* is rare and represents approximately 1% of infective endocarditis cases [2]. Current literature reveals little information on *S.sallivus* being an infectious cardiac agent causing complicated IE. *S.Sallivus* is not widely studied in the current literature. However, based on the available limited literature, *S.Sallivus* exists natively in normal flora. Antagonizing properties are seen in disruptive states of the oral mucosa, mostly in patients with poor oral hygiene. This streptococci strain is similar to *S.Bovius* and yields the same treatment as *S.Bovius* [3].

Complicated Infective Endocarditis, as seen in this patient, requires a broad medical team for successful Management. Systemic embolization is a strong risk amongst severe patients with left-sided infective endocarditis that may lead to poor neurological and kidney sequelae. The current guidelines for managing left-sided infective endocarditis are empirically based and are not entirely clear. Factors such as surgical timing, risk assessment, and a comprehensive team can impact prognosis. Surgical valve replacement reduces the overall mortality compared to

medical therapy [4]. A longitudinal study conducted by Mabiligan et al. compared 5-year outcomes comparing medical management vs surgical, showing patients at 1 and 5 years had decreased hospitalization rates at 43% vs 23%. All cause readmission mortality rates were 64% and 84% percent, and readmission from any major adverse cardiac events including heart failure, endocarditis, and stroke was 25% vs 47% [5]. Moreover, major complications can be just as hard to predict.

A retrospective study by Pazdernik et al looks at outcomes of left-sided complications in 206 individuals infected, specifically left-sided endocarditis, in the span of 15 years. Perivalvular infections were common in prosthetic aortic valves and present a strong clinical indicator for extensive valvular infections. While perivalvular perforations. Interestingly, approximately 46% of individuals were diagnosed with heart failure with valvular prolapse and perforation, leading to fatal outcomes. With respect to hospital mortality septic infection and hemodialysis patients were the highest indicators for hospital mortality [6].

The most common symptoms of infective endocarditis include constitutional symptoms; this patient reported a 40-pound weight loss within the past few months. Interestingly, the patient's leukocytes were at normal levels. After the patient's cultures formed *S.Sallivilus* he was started on cefazolin. Interestingly, the patients had severe mitral regurgitation without signs of pulmonary edema and diminished breathing sounds. As stated previously, *S.Sallivilus* is a rare bacteria, and not many studies have elaborated on its potential clinical sequelae and the possible clinical sequelae, as well as the steps for the management of patients with a rare form of endocarditis.

Conclusion:

Our case highlights the uncommonness of *Streptococcus salivarius* as a causative agent in infective endocarditis (IE), which was further complicated by severe aortic regurgitation and valve perforation. Despite being a commensal member of the oral and gut flora, *S. Salivarius* can have significant clinical implications when it enters the bloodstream, as seen in this patient. The successful management of this complex case required a multidisciplinary approach. It involved a prompt diagnosis, antimicrobial therapy, hemodynamic stabilization, and timely surgical intervention. It's worth noting that the patient's clinical course underscores the importance of considering atypical pathogens in cases of IE. This is especially true when presented with unusual clinical features such as severe aortic regurgitation without typical constitutional symptoms. Furthermore, our case emphasizes the challenges associated with managing complicated IE. These challenges include systemic embolization risk, surgical timing, and selecting appropriate antimicrobial therapy. Despite advancements in diagnostic modalities and therapeutic strategies, the optimal management of rare pathogens like *S. Salivarius* remains an area of ongoing research and clinical interest.

Key Points

- Infective Endocarditis can have subtle presentations. In patients with a previous history of infective endocarditis, we should have a high suspicion for IE in the presence of vague symptoms like unintentional weight loss, malaise, and fatigue even in the absence of fever or leukocytosis.
- Left-sided infective endocarditis carries a high risk of systemic embolization. Minithoracotomy with the removal of the vegetation might be superior to conservative management.

- The management of complicated infective endocarditis needs a multidisciplinary approach involving an infectious disease expert, a cardiothoracic surgeon, a cardiologist, an internal medicine doctor, and an intensivist.

Abbreviation/Acronym	Full Term
IE	Infective Endocarditis
<i>S. Salivarius</i>	<i>Streptococcus Salivarius</i>

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References

1. Jamil, M., Sultan, I., Gleason, T. G., Navid, F., Fallert, M. A. et al. (2019). Infective endocarditis: trends, surgical outcomes, and controversies. *Journal of thoracic disease*, 11(11), 4875–4885. <https://doi.org/10.21037/jtd.2019.10.45>
2. Kim, S. L., Gordon, S. M., & Shrestha, N. K. (2018). Distribution of streptococcal groups causing infective endocarditis: a descriptive study. *Diagnostic microbiology and infectious disease*, 91(3), 269–272. <https://doi.org/10.1016/j.diagmicrobio.2018.02.015>
3. Corredoira, J. C., Alonso, M. P., García, J. F., Casariego, E., Coira, A. et al. (2005). Clinical characteristics and significance of *Streptococcus salivarius* bacteremia and *Streptococcus bovis* bacteremia: a prospective 16-year study. *European journal of clinical microbiology & infectious diseases : official publication of the European Society of Clinical Microbiology*, 24(4), 250–255. <https://doi.org/10.1007/s10096-005-1314-x>
4. Nappi, F., Spadaccio, C., & Moon, M. R. (2020). A management framework for left sided endocarditis: a narrative review. *Annals of translational medicine*, 8(23), 1627. <https://doi.org/10.21037/atm-20-4439>
5. Mabilangan, C., Cole, H., Hiebert, B., Keynan, Y., Arora, R. C., & Shah, P. (2020). Short- and Long-term Outcomes of Medically Treated Isolated Left-Sided Endocarditis: A Retrospective Study With 5-Year Longitudinal Follow-up. *The Canadian journal of cardiology*, 36(9), 1534–1540. <https://doi.org/10.1016/j.cjca.2019.10.039>
6. Pazdernik, M., Wohlfahrt, P., Kautzner, J., Kettner, J., Sochman, J., Stasek, J., Solar, M., Pelouch, R., & Vojacek, J. (2019). Clinical predictors of complications in patients with left-sided infective endocarditis: A retrospective study of 206 episodes. *Bratislavské lekárske listy*, 120(7), 510–515. https://doi.org/10.4149/BLL_2019_082



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