Subacute Bacterial Endocarditis Secondary to Lactobacillus Species

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Subacute Bacterial Endocarditis Secondary to Lactobacillus Species

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Introduction
Lactobacillus species are usually considered nonpathogenic normal flora of the oral cavity and are some of the most common causative organisms of dental caries. Conversely, they are rare causative agents in subacute bacterial endocarditis, which is usually caused by Streptococcus and Staphylococcus.

Methods and Results
This is a case of a 55-year-old female with a history of oral streptococcal and type 1 diabetes with the stage renal disease. The patient presented with subacute bacterial endocarditis in the aortic valve secondary to Lactobacillus and later became septic. Further imaging evidence of multiple septic emboli in the brain with mental status change. Patient eventually had emergent aortic valve replacement due to moderate aortic insufficiency and poor dental condition, and was treated with 42-day course of IV Gentamycin and IV Penicillin for Lactobacillus bactemia.

Conclusions
This case report highlights how nonpathogenic organisms like Lactobacillus species can cause diagnostic complexities, such as subacute bacterial endocarditis, resulting in associated systemic complications. It also emphasizes the importance of maintaining good oral hygiene and medical compliance in patients with known history of valvular heart disease.

Case Report
A 55-year-old Caucasian female was transferred from an outside hospital for hypotension with oxygen saturation of 68% on room air and elevated troponin level of 2.39. She appeared pale and was admitted to the hospital with multiple episodes of coughing and chest pain.

Medical history: diet-controlled type 2 diabetes mellitus, hypertension, aortic stenosis, and stage renal disease on Hemodialysis (HD), hypothyroidism, history of carcinomas of lower extremities, no history of intravenous drug abuse.

Physical examination: patient was breathing comfortably on nasal cannula; appeared alert and oriented to person, place, and time; Grade 3/6 systolic ejection murmur with radiation to the sternal border; petechiae across lower extremities; trace pedal edema.

During hospitalization, patient spiked a fever and a her heart rhythm changed from sinus to atrial fibrillation.

Echocardiogram showed a thickened tricuspid leaflet aortic valve with likely vegetation seen on the aortic valve and moderate aortic stenosis, mild aortic insufficiency and thickened mitral valve leaflets. Left ventricle ejection fraction was 45-50% (Figure 1).

Blood culture from two different peripheral sites identified Lactobacillus species.

Evaluation by inpatient dentistry found multiple dental caries.

Transesophageal echocardiogram confirmed 2 cm bulky vegetation in aortic valve with moderate to severe aortic regurgitation directed towards the anterior mitral leaflet.

Evidence of vegetation in the aortic valve and gram-positive rods in chains in blood cultures fulfilled the criteria of definite IE (Table 1).

She was started on 42-day course of IV Gentamycin 70 mg and IV Penicillin 615 MG to treat Lactobacillus sepsis.

On hospital day 6, patient had an episode of hallucination, a new cognitive baseline. An MRI of the brain showed multiple septic emboli likely from the vegetation in the heart (Figure 2).

Patient appeared clinically unstable and was hemodynamically unstable with persistent hypotension. Aortic valve shortening showed decreased cardiac function and worsening aortic insufficiency. Evaluation by a cardiothoracic surgeon resulted in emergent aortic valve replacement with biologic prosthesis.

Culture of the aortic valve leaflet was positive for Lactobacillus species. Blood culture after heart surgery revealed Lactobacillus species (Figure 3).

Information provided by patient's niece after her surgery indicated the patient had no prior dental procedures and had not seen a dentist for a long period of time. She had started to show some signs of mental status change about a month prior to her hospital admission. Her home was not in habitable condition and she was taking substandard medications.

After extended hospitalization, patient was maintained on Bisoprolol and Pulse Airflow Pressure (PAP) therapy 4 hours before she was able to be weaned off. Her condition improved over time and was discharged to rehabilitation in stable condition.

Discussion
The midline sternotomy was performed on the day of surgery, which was completed without complications.

Posterior mediastinal air required for cardiothoracic surgery wasogram showing air in the mediastinum (white arrow).

Figure 2. MRI of the Brain showing multiple fresh septic emboli (yellow arrows).

Table 1. Duke’s Criteria of Infectious Endocarditis

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of symptoms</td>
<td>&lt;3 weeks</td>
</tr>
<tr>
<td>Fever</td>
<td>&gt;10 days</td>
</tr>
<tr>
<td>New valvular heart disease</td>
<td>Yes</td>
</tr>
<tr>
<td>Changes in organ function</td>
<td>Costochondritis</td>
</tr>
<tr>
<td>Changes in blood counts</td>
<td>White blood cell count &gt;20,000</td>
</tr>
<tr>
<td>Changes in blood cultures</td>
<td>Positive blood culture</td>
</tr>
</tbody>
</table>

The risk of SBE in this case is due to the nonpathogenic nature of lactobacilli. There are very few cases reported of SBE secondary to Lactobacillus and this case report is a 45-year-old female with SBE secondary to Lactobacillus in homes where she had dental extraction 3 months before developing SBE secondary to Lactobacillus caused aortic valve endocarditis due to poor dental hygiene. Patient subsequently had aortic valve replacement, but died postoperatively.

Patient’s risk factors included poor oral hygiene; patient had type 1 diabetes mellitus; and a medical history of hypertension.

A recent 2014 case described a 71-year-old female with complex aortic regurgitant heart disease who developed IE secondary to Lactobacillus 20 months after a cardiac procedure. The infection was treated and resolved by antibiotic regimen of penicillin, clindamycin and gentamicin.

A 2005 retrospective review of lactobacillus IE showed:

- 26% of cases had structural heart disease.
- 47% of cases had dental procedure or predisposing dental condition.
- 26% of cases had systemic embolism.

It is highly possible the patient in this report developed SBE on the aortic valve that was already moderately stenotic due to medical noncompliance and poor oral hygiene.

The suspected causative organism was Lactobacillus from her dental caries. She became bacteremic and developed septic embolism in her brain, causing gradual mental status change.

This case was started on antibiotics to treat the bactemia, and subsequently received aortic valve replacement due to moderate aortic insufficiency and the presence of septic embolism.

The case highlights how lack of personal hygiene may lead, what is thought as normal nonpathogenic flora, to induce complications such as sepsis and septic embolism in the brain.

Further, as shown in this case, proper oral hygiene may be imperative in patients with known vascular disease.

Conclusion
This case report exhibits a clinical diagnostic secondary to a rare causative organism part of the common human flora, Lactobacillus.

Lactobacillus is common flora of the oral cavity and is involved in the pathogenesis of dental caries.

Patients with a known valvular disease are at a risk of developing SBE.

In the case of this 55-year old female, her risk was exacerbated by factors including poor oral hygiene, a medical history of diabetes and on long term HD.

She had mental status changes about a month prior to her admission secondary to septic embolism in the brain.

During hospitalization she was treated with a 42-day course of IV Penicillin G and IV Gentamycin to treat Lactobacillus bacteremia, and subsequently received aortic valve replacement due to moderate aortic insufficiency and presence of septic embolism in the brain. Her condition gradually stabilized and improved over time.

References:

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