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Sarcina ventriculi in a patient of acid peptic disease and gastric outlet obstruction: A case report on a rare microorganism

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Abstract

Sarcina ventriculi is a gram-positive, anaerobic, spore forming, non-motile, coccus bacteria rarely encountered in gastrointestinal biopsies. This report aims to enhance clinical awareness of this uncommon entity. We report a case of a 56-year male who presented with intermittent dyspepsia, abdominal distension and nausea. He was advised an Upper GI endoscopy which revealed incomplete gastric outlet obstruction with pyloric stenosis. A biopsy from the pylorus was taken and sent for histopathologic examination which showed *S. ventriculi* with characteristic tetrad and octad arrangements within the gastric lumen. Though rare, it has been increasingly reported in gastrointestinal specimens in recent times. Its pathogenic significance remains debated. However, its association with conditions like pyloric stenosis and other potentially life-threatening complications warrants clinical attention.

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Introduction

Sarcina ventriculi is a rare anaerobic spore forming non-motile Gram-positive coccus bacteria which has been reported in gastric biopsies. It was first described by the Scottish anatomist and biologist John Goodsir, in 1842, during microscopic examination of gastric content of a patient with vomiting.[1-3]

Recently, reports have shown an association between *S. ventriculi* in the stomach and chronic nausea, dyspepsia, abdominal pain, gastric ulcers, delayed gastric emptying, rarely emphysematous gastritis and gastric perforation. It has also been found in gastric specimens without pathologic changes, suggesting that it may be a commensal organism. A search of PubMed and Google Scholar revealed a recent study, published in 2025, which indicates that to date, 66 cases of gastric *S. ventriculi* have been documented, highlighting the rarity of this finding.[4-9] This case underscores the significance of considering uncommon microbial causes, like *S. ventriculi*, in patients who present with atypical gastric symptoms. Due to the lack of sufficient documented cases and the consequent knowledge gap within the medical community, we present this case report to improve awareness.

Case report

We report a case of a 56-year male who presented to the gastroenterology outpatient department with complaints of intermittent dyspepsia, abdominal distention and nausea. He was advised an Upper GI endoscopy which revealed food residues in the stomach, had features of incomplete gastric outlet obstruction with pyloric stenosis, and the scope could not be negotiated beyond it. There was no obvious lesion. Pre-pylorus gastric mucosal biopsy was taken. Microscopic examination showed fragments of gastric mucosa with intact foveolar epithelium. The lumen and mucosal surface showed several tetrad arrangements initially thought to be vegetable matter was revealed to be organisms arranged in tetrads and octads-consistent with *Sarcina ventriculi*, Figure 1.

As our patient presented with a non-life-threatening condition, he was managed conservatively with proton pump inhibitors (PPIs), sucralfate, metronidazole 250 mg thrice daily and ciprofloxacin 250 mg twice daily for 1 week. Treatment is indicated for symptomatic patients with confirmed *S. ventriculi* infection, especially those displaying signs of significant gastric pathology. Asymptomatic cases, identified incidentally, may necessitate observation with careful monitoring for the development of symptoms.

This case report gives a detailed account of a rare clinical presentation adding to the limited body of literature on this organism, though its limitation is the inherent lack of generalizability associated with single case studies.

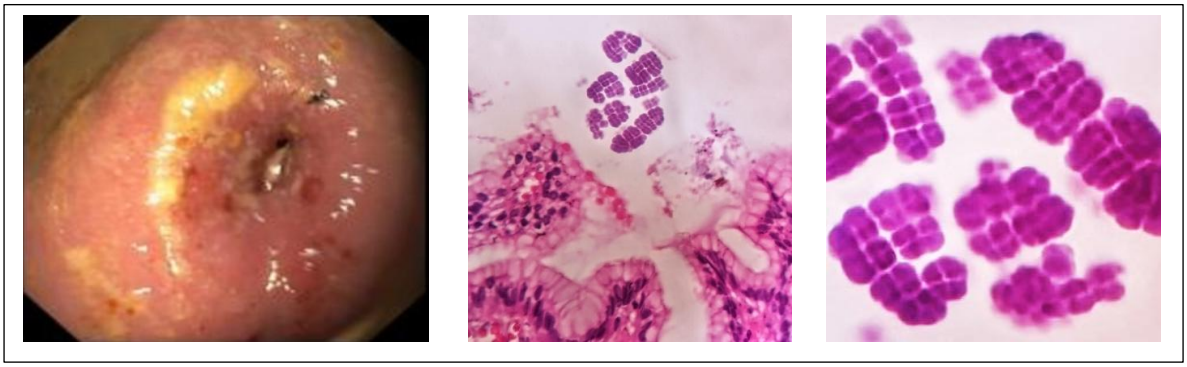

Figure 1. Endoscopic view showing pyloric stenosis (left), pyloric biopsy showing gastric mucosa with *S. ventriculi* (middle), *S. ventriculi* demonstrating characteristic tetrad and octad arrangement (HE, 40X) (right)

Discussion

Our case report involves a 56-year male patient with acid peptic disease and pyloric stenosis whose gastric biopsy revealed S. ventriculi. Previously reported cases span a broad age range, from as young as 1 year old to as old as 87 years old with majority of cases occurring in individuals in their 50s, and a slight female preponderance. The *S. ventriculi* is naturally found in soil, water and on cereal seeds. It enters the gastrointestinal tract through ingestion of contaminated food. It has been detection in the faeces of healthy adults, particularly in those people taking a vegetarian diet.[10]

In our case, the patient presented with symptoms of dyspepsia, abdominal distension, nausea and partial pyloric stenosis. The literature has reported symptoms related to gastritis, and occasionally complications like gastric ulcer, gastric perforation, oesophageal atresia, gastric polyps, gastric pneumatosis, gastric or oesophageal adenocarcinoma, gastric banding and benign pyloric or duodenal mass.[7,10-13] The stomach is the most frequent site of *S. ventriculi* infection accounting for 77%, and less commonly oesophagus (15%), duodenum (13%), urine, and pneumonectomy specimen.[10]

The histopathological examination of gastric biopsy HE-stain reveals the organism typically arranged in tetrads and octads, as we observed in our present case. Additionally, Gram's stain and Gomorri methenamine silver stains may be used to highlight the organism.[7,10-14]

Our patient was managed with antibiotics and PPIs showing improvement of symptoms but was later lost to follow up. Other studies also showed symptomatic improvement with antibiotics (metronidazole and/or ciprofloxacin), PPIs, and prokinetics in non-life-threatening cases. Literature varies on antibiotic necessity; some improve with PPIs/prokinetics alone, or in combination with antibiotics while complicated cases require surgery.[15]

The true pathogenicity of the *S. ventriculi* bacteria remains unclear, whether it is a commensal or a pathogen is still debated.[15] However, its association with life-threatening complications necessitates clinical awareness and early diagnosis and management. Owing to the paucity of reported cases as well as limited awareness among medical professionals, it is crucial to increase the clinical awareness of this entity.

Conclusion

Sarcina ventriculi is an underreported bacteria in gastrointestinal biopsies and was incidentally found in the gastric biopsy of a 56-years male who presented with symptoms of incomplete pyloric obstruction. The patient was managed conservatively with proton pump inhibitor and antibiotics, unlike complicated cases of perforation or malignancy requiring surgery and intensive management.

Author contribution

Concept design: SMT, NJ, LP; Literature search: SMT, BP; Data analysis: SMT, LP, NJ; Draft manuscript: All; Final manuscript and accountability: All

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Conflict of interest

None

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Consent for case report

All the appropriate patient consent has been taken in the form of verbal and written. In the consent form, the patient gave consent for his images and other clinical information to be reported in the journal. The patient was counselled that her name and initials would not be published and due efforts would be made to conceal the identity, but anonymity cannot be guaranteed.

Supplementary material

The data and supplementary material that support the findings of this study are available from the corresponding author upon reasonable request.

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