

Type IV Hiatal Hernia Inducing Sinus Bradycardia

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1. Abstract

A 50-year-old male who presents with worsening left upper quadrant pain for several months. The pain constant and tender over the left ribs, and worse when lying down. EKG showed sinus bradycardia. CT chest/abdomen/pelvis showed large hiatal hernia containing a portion of the transverse colon, with no associated bowel obstruction. The patient was diagnosed with an incarcerated Type IV Hiatal Hernia. EGD yielded findings of LA grade D esophagitis and a hiatal hernia, which was later reduced with 3 cm of intra-abdominal esophagus and posterior toupet fundoplication. The patient's symptoms began to resolve, and he was discharged two days later.

2. Introduction

A hiatal hernia is a relatively common condition in which the contents of the abdomen protrude into the thoracic cavity through the esophageal hiatus. There are four types of hiatal hernias, classified by the extent and nature of the herniation. Type IV hiatal hernias, the most severe, involves the herniation of abdominal viscera into the thorax, and often impact organs such as the spleen, colon or small intestine [1]. This condition can present with a range of symptoms, ranging from gastrointestinal discomforts to significant cardiac complications, such as ventricular tachycardia and arrhythmias [2,3]. Sinus bradycardia, however, is an especially unique finding of this case report. Hiatal hernias can cause clinically important, sometimes life-threatening, cardiac complications. These typically occur when the herniated organs compress the heart structures, leading to arrhythmias and, in extreme cases, heart failure [4,5]. The interplay between hiatal hernias and cardiac function is complex and necessitates careful diagnostic evaluation and management. This

report details a patient with a Type IV hiatal hernia who presented with bradycardia, likely secondary to stimulation of the vagus nerve, cardiac compression, or both. Similar cases in literature have demonstrated the importance of considering hiatal hernia in the differential diagnosis of cardiac symptoms, especially in patients with atypical presentations [6,7]. The management of such cases typically requires a multidisciplinary approach, and occasionally surgical intervention to correct the anatomical defect and relieve associated symptoms [8]. The following case description gives details of the clinical presentation, diagnostic workup, and results of treatment. It underlines the importance of timely and correct diagnosis in the treatment of complex hiatal hernias and their complications.

3. Case Description

The patient is a 50-year-old male with a history of psoriatic arthritis and depression who presents with left upper quadrant pain. The patient says that the pain has been present for several months, but recently worsened over the past couple days. The pain is described as band-like over the left ribs, constant, tender to palpation, and worse when lying down. The patient also endorses emesis with dry heaves, which can last for hours at a time. Bowel movements have been regular. Labs were unremarkable as D dimer, lipase, and troponin were all within normal limits. EKG showed sinus bradycardia (Figure 1). CT chest/abdomen/pelvis with contrast showed large hiatal hernia containing a portion of the proximal transverse colon, with no associated bowel obstruction (Figure 2). Both the General Surgery and Gastroenterology teams were consulted. The patient was diagnosed with an incarcerated Type IV Hiatal Hernia. EGD yielded findings of LA grade D esophagitis (one or more mucosal breaks

involving at least 75% of esophageal circumference), hiatal hernia, and duodenal ulcer with no stigmata of bleeding in the duodenal bulb. The patient was subsequently scheduled for laparoscopic paraesophageal hernia repair. The results of the procedure yielded a reduced hernia with 3 cm of intra-abdominal esophagus and posterior toupet fundoplication. The patient's symptoms began to resolve, and he was discharged two days later.

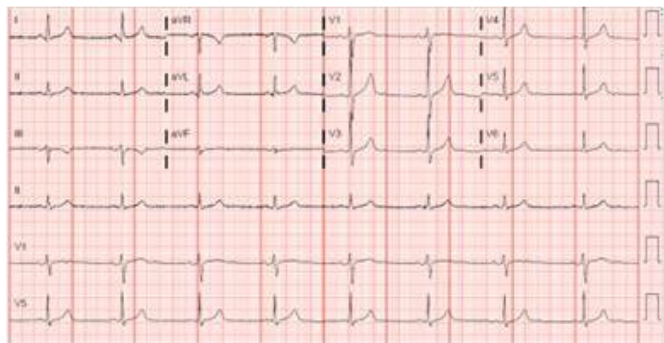


Figure 1: EKG on admission showing sinus bradycardia.

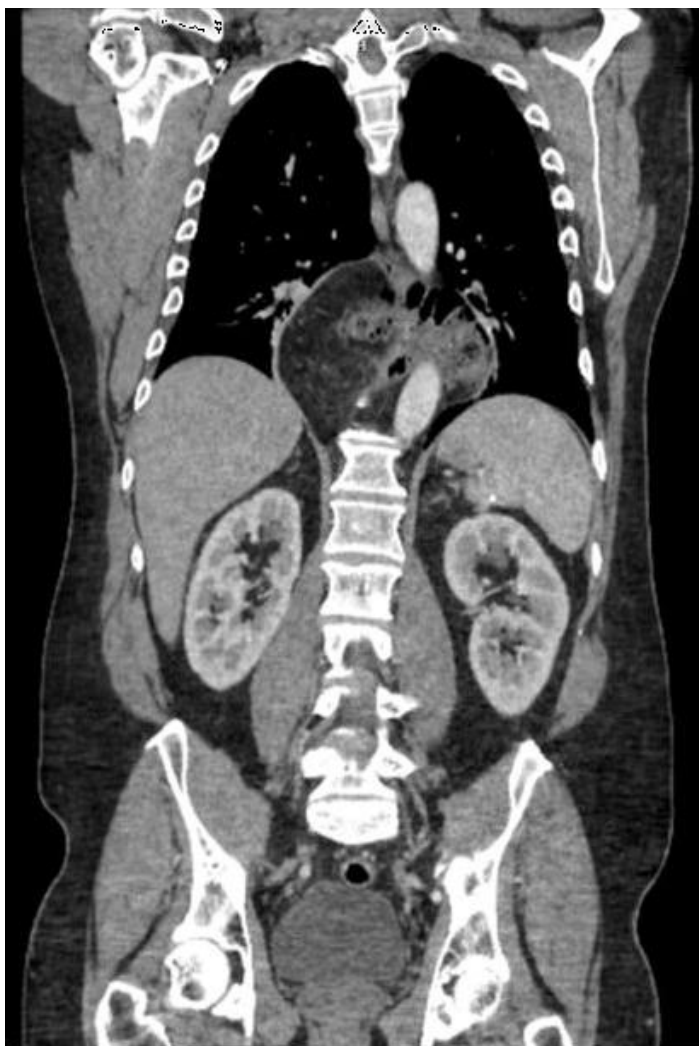


Figure 2: Coronal view of CT chest/abdomen/pelvis showing the hiatal hernia.

4. Discussion

This case highlights patterns of clinical presentation for Type IV hiatal hernias, particularly its potential to cause bradycardia. The relationship between hiatal hernias and cardiac symptoms is well-documented, albeit infrequent, with various mechanisms proposed for the cardiac manifestations observed. As noted, a very common mechanism by which a hiatal hernia causes bradycardia is direct, mechanical compression over the heart or its connected structures. In this case, the large sliding hernia contained a portion of the proximal transverse colon, which likely compromised the vagus nerve, the cardiac chambers, or both, leading to sinus bradycardia [2,3]. This case also underscores the importance of a thorough diagnostic approach. Initial workup includes an extensive cardiac enzyme workup, electrocardiogram, and imaging studies. When a patient is brought into an emergency setting with the set of symptoms described in the case report, the physician will first rule out primary pathologies of the cardiac workup. It is only after preliminary differentials in the cardiac workup are determined to be negative that the diagnosis of bradycardia secondary to a Type IV hiatal hernia can be made. Correlation of the imaging findings with the clinical presentation is essential. Most cases in literature report that imaging was the most significant contributor to the diagnosis of hiatal hernia, especially in patients with cardiac symptoms [4,7]. The successful management of this case with laparoscopic paraesophageal hernia repair is consistent with the outcomes reported in the literature. Surgical intervention not only addresses mechanical obstruction, but also alleviates the cardiac symptoms caused by the hernia. Post-surgical improvement in symptoms and resolution of bradycardia further confirm the causative role of the hiatal hernia in this patient's clinical presentation [5,8]. It is important to note that other symptoms included severe gastroesophageal reflux disease (GERD) and esophagitis, which are common in a patient with a large hiatal hernia. The presence of esophagitis in a patient accompanying hiatal hernias, particularly that of LA grade D, necessitates a multidisciplinary approach for comprehensive management.

5. Conclusion

This case of a 50-year-old male with a Type IV hiatal hernia presenting with sinus bradycardia highlights the regular and complex interaction between the gastrointestinal tract and the cardiovascular system. The successful treatment of this patient illustrates the need to consider hiatal hernias in the differentials of unexplained cardiac symptoms. Use of imaging and involvement from multiple specialties facilitated a carefully planned surgical intervention. The surgery led to a complete reversal of cardiac issues. Future cases should continue to document and explore the diverse presentations and management strategies of Type IV hiatal hernias to enhance understanding and improve patient outcomes.

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