კლინიკური შემთხვევა

FALSE MYOCARDIAL INFARCTION A PATIENT WITH DIAPHRAGMATIC HERNIA: A CASE STUDY

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Rezume

The article presents a clinical case of false myocardial infarction in a patient with a diaphragmatic hernia, where the pylorus, antrum and the half of the large intestine (the ileocecal angle, the ascending colon, the right fold of the colon and the right half of the transverse colon) was lodged in the chest cavity, behind the sternum forming the strangulated Larrey-Morgagni hernia. Clinical presentation, diagnostic challenges, management strategies, and the importance of thorough evaluation in such cases is discussed.

Case presentation: A 54-year-old female presented to the emergency department with diffuse abdominal and chest pain, bloating, nausea, vomiting, general weakness, difficulty in passing stool and gases, dry mouth, increased temperature, shortness of breath, and diaphoresis. On examination, she was found to have elevated blood pressure and tachycardia. An ECG revealed ST-segment elevations in lead aVR, prompting suspicion of LMCA or triple vessel disease. Further diagnostic tests, including chest X-ray, echocardiogram, and chest CT, helped clarify that the patient's symptoms were due to a diaphragmatic hernia rather than coronary artery disease. This case demonstrates the diagnostic challenges in distinguishing LMCA obstruction from other conditions that mimic similar ECG patterns.

Conclusion: This case underscores the importance of differential diagnosis when evaluating patients with chest pain and ECG changes. ST-segment elevation in lead aVR is often associated with LMCA or triple vessel disease. However, other conditions, such as diaphragmatic hernias, can mimic these changes. This highlights the need for a comprehensive diagnostic approach that includes imaging studies, echocardiography, and clinical evaluation to avoid misdiagnosis and ensure appropriate management.

Key words: Chest pain, Miocardial infarctionl; Larrey-Morgagni hernia

INTRODUCTION

Larrey-Morgagni hernia is the rarest form of congenital diaphragmatic hernia (CDH), accounting for only 2% to 5% of cases [1]. Diaphragmatic hernias include the Bochdalek, hiatal and paraesophageal hernias. A Morgagni hernia arises from an anterior, retrosternal diaphragmatic defect [2,3]. The condition is rarer than the other CDH types [4]. Morgagni hernias are rare congenital diaphragmatic defects that can lead to bowel obstruction and incarceration if not repaired. Symptoms are often nonspecific and may include abdominal pain, nausea, vomiting, chest pain, cough and shortness of breath. According to the literature, these hernias often present as unexpected diagnoses. A combination of digestive symptoms with respiratory or cardiac issues may suggest the presence of a congenital or posttraumatic hernia [5].

Diaphragmatic hernias can lead to a range of complications and often present with diagnostic challenges. In some instances, the clinical features may closely resemble those of acute coronary syndromes. This article presents a case in which a diaphragmatic hernia resulted in ST-segment elevation in lead aVR and V1 on the electrocardiogram (ECG), initially misleading the healthcare team into considering a myocardial infarction.

CASE PRESENTATION

A 54 -year -old female presented to the emergency department with diffuse abdominal and chest pain, bloating, nausea and vomiting, general weakness, difficulty in passing stool and gasses, dry mouth, increased temperature, shortness of breath and diaphoresis. On examination, she was found to have elevated blood pressure and tachycardia. An ECG revealed ST segment depression in precordial leads V2-V6, I, II, and aVL and 1 mm ST segment elevation in the aVR and V1 prompting suspicion of LMCA or triple vessel disease., (Fig 1a). For further evaluation of her condition, a series of diagnostic tests were performed:

Chest X-ray: This imaging study revealed a left-sided diaphragmatic hernia with significant displacement of the stomach and the large intestines into the thoracic cavity. Echocardiogram: A transthoracic echocardiogram was conducted, which demonstrated normal cardiac function without any regional wall motion abnormalities. Given the clear findings on the chest X-ray and echocardiogram, the clinical team decided against measuring troponin level. Chest CT was done: A 7 cm diameter defect is visible in the anterior right medial corner of the diaphragm (Larrey's triangle), through which the pylorus, the proximal part of the duodenum, the ascending colon and the transverse colon are protruding supradiaphragmatically in the chest

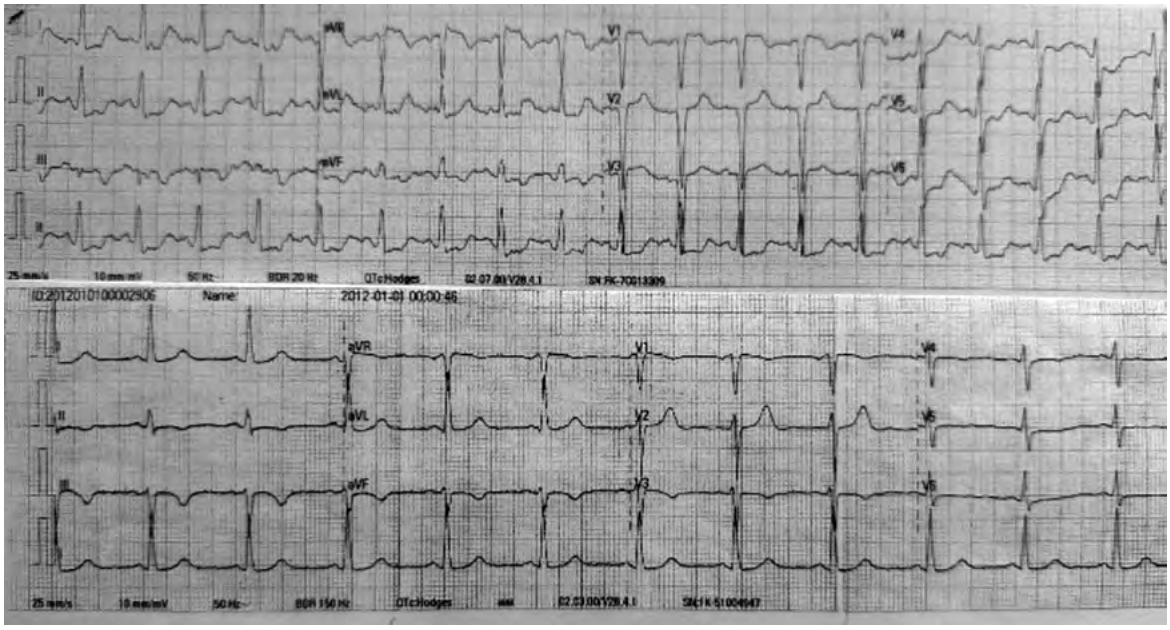

Fig1. (a, b)

cavity. The intestinal lumen is significantly narrowed - corresponding the CT image of Larrey-Morgagni's diaphragmatic hernia (Fig 2, Fig 3).

The imaging results provided sufficient evidence to suggest that the patient's symptoms were attributable to the diaphragmatic hernia rather than an acute myocardial infarction.

DISCUSSION

Congenital diaphragmatic hernia (CDH) occurs in approximately 1 out of every 4000-5000 live births. While most patients with CDH are diagnosed either antenatal or during the neonatal period with respiratory distress, adult presentation is exceedingly rare. In adults, CDH may present with nonspecific symptoms such as abdominal pain, vomiting, and intestinal obstruction, often accompanied by acute respiratory distress, and typically in the absence of significant past medical history. Surgical management remains the cornerstone of treatment for symptomatic cases [6].

In the case of diaphragmatic hernia, the herniation of abdominal contents into the thoracic cavity can lead to anatomical displacement and mechanical pressure on the heart and lungs. This displacement, particularly involving the left side of the diaphragm, can disrupt normal ventilation and blood flow, potentially causing ischemic changes in the myocardium. While this could trigger abnormal electrical activity, leading to ECG changes such as ST-segment elevation or depression, these patterns are less consistent than those seen in coronary artery disease. The clinical context is crucial in differentiating between these causes of ischemic changes. [10].

Fig 2. Computed tomographic scan (Larrey-Morgagni hernia, Hernia Orifice)

Fig 3. Computed tomographic scan (Larrey-Morgagni hernia, The stomach protrudes into the chest cavity)

Given the importance of accurate ECG interpretation, it is essential to distinguish ischemic changes arising from coronary artery disease from those associated with diaphragmatic hernia. The key differences often lie in the clinical context, including the patient's medical history, physical examination findings, and supporting imaging studies (e.g., chest X-ray, CT scan). These studies may reveal the presence of a diaphragmatic hernia, helping to prevent misinterpretation of ECG findings.

While the ECG findings in coronary artery disease, such as aVR ST-segment elevation combined with widespread ST depression, may suggest acute ischemia, diaphragmatic hernia requires careful clinical consideration. In the absence of ischemic history or coronary artery disease, a thorough evaluation of other clinical factors should guide diagnosis[11].

The absence of regional wall motion abnormalities on echocardiography provides critical evidence against the presence of acute myocardial infarction. This finding further supported the decision to avoid troponin testing, as myocardial infarction was not likely in this case.

MANAGEMENT

Recognizing the true etiology of the patient's symptoms was vital for appropriate management. The patient underwent elective surgical repair of the diaphragmatic hernia. Open hernioplasty was performed. The patient was discharged from the clinic in satisfactory condition on the fourth day after the operation. This procedure was performed successfully addresing the anatomical issue that had led to the false MI diagnosis. Remarkably, her ECG returned to normal (fig 1b), with resolution of the previously noted ST-segment elevations, confirming that the initial findings were indeed attributable to the hernia rather than myocardial ischemia.

CONCLUSION

This case underscores the critical importance of differential diagnosis when evaluating patients with chest pain and ST-segment changes. Myocardial infarction (MI) is a serious cardiac emergency associated with significant morbidity and mortality, necessitating prompt intervention. In older patients, symptoms can often be atypical, leading to delays or missed diagnoses of MI. Consequently, ST-segment changes on an ECG are a key diagnostic tool in the initial evaluation [7,8]. However, several conditions can mimic the ECG patterns of MI [9], and a diaphragmatic hernia should be considered in the differential diagnosis of false MI, particularly in patients with relevant medical histories.

Comprehensive imaging, including chest X-ray, chest CT, and echocardiography, is crucial for accurate diagnosis and effective treatment. Such imaging can help avoid unnecessary procedures resulting from misdiagnosis [10,11]. Since laparotomy has low morbidity and mortality, preoperative diagnosis is vital for guiding the surgical approach, whether via laparotomy or thoracotomy. Early surgical intervention is essential in all cases to prevent life-threatening complications such as obstruction or strangulation.

KEY TAKEAWAYS:

ST-segment elevation in leads aVR and V1 may occur due to diaphragmatic hernia, leading to a false MI diagnosis.

Diagnostic imaging, including chest X-ray, chest CT, and echocardiography, is crucial for distinguishing true myocardial infarction from other causes of chest pain.

A multidisciplinary approach, incorporating imaging and surgical consultation, is essential for effectively managing complex cases.

This case highlights the complexities of diagnosing and managing patients with concurrent conditions, emphasizing the need for thorough investigation to ensure optimal patient care.

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რეზიუმე

ეს სტატია განიხილავს ცრუ მიოკარდიუმის ინფარქტის (მი) კლინიკურ შემთხვევას დიაფრაგმალური თიაქრის მქონე პაციენტში, როდესაც პილორუსი, ანტრუმი და მსხვილი ნაწლავის ნაწილი (ილეოცეკალური კუთხე, ასწვრივი კოლინჯი და განივი კოლინჯის მარჯვენა ნახევარი) განლაგებული იყო გულმკერდის ღრუში, მკერდის ძვლის უკან (ლარეი-მორგაგნის თიაქარი). სტატიაში განხილულია კლინიკური გამოვლინებები, დიაგნოსტიკური გამოწვევები, მართვის სტრატეგიები და ამგვარი შემთხვევების შეფასების პროცესის მნიშვნელობა.

შემთხვევის აღწერა: 54 წლის ქალი ჰოსპიტალიზებული იქნა გადაუდებელი მედიცინის დეპარტამენტში შემდეგი ჩივილებით: მუცლისა და გულმკერდის არეში დიფუზური ტკივილი, შებერილობა, გულისრევა და ღებინება, განავალისა და აირებზე გასვლის გაძნელება, პირის სიმშრალე, საერთო სისუსტე, ტემპერატურის მატება, სუნთქვის გაძნელება და ჭარბი ოფლიანობა. გასიჯვისას პაციენტს აღენიშნებოდა მომატებული არტერიული წნევა და ტაქიკარდია. ელექტროკარდიოგრამამ (ეკგ) აჩვენა ST-სეგმენტის ელევაცია aVR-განხრაში, რაც შესაძლოა მწვავე მიოკარდიუმის ინფარქტის ნიშანი ყოფილიყო. შემდგომი დიაგნოსტიკური კვლევების, მათ შორის გულმკერდის რენტგენოგრაფიის, ექოკარდიოგრაფიისა და გულმკერდის კომპიუტერული ტომოგრაფიის ,შედეგებმა დაადასტურა, რომ პაციენტის სიმპტომები დიაფრაგმის თიაქრის შედეგად იყო გამოწვეული და არა კორონარული არტერიების დაავადებით.

დასკვნა: ეს შემთხვევა ხაზს უსვამს დიფერენციალური დიაგნოსტიკის მნიშვნელობას პაციენტებში, რომლებსაც აქვთ გულმკერდის ტკივილი და ეკგ-ის ცვლილებები. ST-სეგმენტის ელევაცია aVR-ში ხშირად ასოცირდება მარცხენა კორონარულ არტერიის ან სამსისხლძარღვოვან დაავადებასთან. თუმცა სხვა მდგომარეობებმაც, მაგალითად დიაფრაგმის თიაქარმა, შეიძლება გამოიწვიოს მსგავსი ცვლილებები.

შეცდომის თავიდან აცილების მიზნით და მკურნალობის სწორი და დროული დაგეგმისთვის მნიშვნელოვანია კომპლექსური დიაგნოსტიკური მიდგომა, რომელიც მოიცავს რადიოლოგიურ კვლევას, ექოკარდიოგრაფიასა და კლინიკურ შეფასებას.

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