

# A Case of Thymoma Masquerading as Hiatus Hernia, Pericardial Effusion: A Diagnostic Dilemma

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## ABSTRACT

Thymoma is a rare neoplasm of the thymus gland, and as an adult, it accounts for 30% of anterior mediastinal tumors. The peak incidence is between 55 and 65 years old. Thymoma is a cancer that is extremely uncommon, accounting for just 0.2-1.5% of all malignancies, with an estimated incidence of between 0.13 and 0.32 per 100,000 people each year. We discuss a rare instance of a 58-year-old female patient who was admitted after complaining of multiple joint pain, gastroesophageal reflux disease (GERD), and generalized weakness. She was initially diagnosed with hiatus hernia and pericardial effusion based on imaging studies. However, her symptoms persisted despite treatment, and further evaluation revealed the presence of a thymoma. It was hard to make a diagnosis because the patient had a thymoma, a hiatus hernia, and pericardial effusion all at the same time. The initial diagnosis was complicated by the fact that the patient had unusual and refractory symptoms, which means they needed a thorough evaluation and follow-up. The case highlights the diagnostic complexity associated with thymoma, especially when coexisting with other conditions such as hiatus hernia and pericardial effusion. Despite its rarity, thymoma necessitates considerations in patients presenting with nonspecific symptoms, emphasizing the importance of thorough evaluation and follow-up. This underscores the need for a comprehensive diagnostic approach to ensure timely and accurate management, particularly in cases with an atypical and refractory presentation. In the described case, nurses' initial assessment skills are crucial for identifying the need for critical care intervention. Their role extends beyond the perioperative phase, encompassing patient education on procedures and potential outcomes.

**Keywords:** Case Report; Hiatus Hernia; Pericardial Effusion; Thymoma; Thymic Neoplasm; Thymus Carcinoma

## INTRODUCTION

Thymoma is a malignant neoplasm that arises from the epithelial cells of the thymus gland (Mathiselvan, Irusen & Koegelenberg, 2019). A cancerous condition known as thymoma begins in the thymus gland. White blood cells called T-cells are made in the thymus, which is behind the breastbone. T-cells fight off illness and are a type of lymphocyte (Thymic Carcinoma). While thymoma is the most prevalent tumor found in the anterior mediastinum, it is considered to be an exceptionally rare occurrence. The peak incidence is between 55 and 65 years old (Nolasco-de la Rosa *et al.*, 2016). Most thymoma patients are in the early stages, and about one-third of them are asymptomatic. Thymoma is a cancer that is extremely uncommon, accounting for just 0.2-1.5% of all malignancies, with an estimated incidence of between 0.13 and 0.32 per 100,000 people each year (Rich, 2020).

According to Liu, Gao and Zhao (2017), chest pain and joint discomfort are the next two clinical manifestations in symptomatic patients after a cough. The occurrence of a hiatus hernia and pericardial effusion in a thymoma patient has not been documented. Pericardial effusion occurs in roughly 20% of cases. But a surprising clinical trait of the thymoma is spontaneous pericardial effusion (Fazlıoğulları *et al.*, 2012). Although rare, pericardial effusion in thymomas can turn purulent when an infection affects a nearby organ, despite the fact that this condition is often severe (Bakhriansyah *et al.*, 2022).

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A hiatus hernia is a condition where a part of the stomach protrudes through the diaphragm into the chest cavity. This can cause symptoms such as heartburn and chest pain. Thymoma is not a direct cause of hiatus hernias; rather, the diaphragm muscle deterioration is. According to some estimates, hiatus hernia is present in about 10–20% of the general population, and the incidence of thymoma is estimated to be approximately 0.15–0.5 per 100,000 people per year. However, the prevalence of hiatal hernia in people suffering from thymoma is poorly documented. Some patients with symptomatic gastroesophageal reflux disease and a hiatal hernia were enrolled and randomly assigned to either cruroplasty with nonabsorbable sutures or polytetrafluoroethylene nonabsorbable mesh followed by total fundoplication (Patti & Herbella).

Thymoma associated with hiatus hernia and pericardial effusion is extremely unusual, with limited reports in the literature. Thymoma masquerading in this context indicates that the thymoma was presenting with symptoms that were similar to those of a hiatus hernia, which is made difficult to diagnose initially.

### **Case Presentation**

A 58-year-old woman who had been complaining of retrosternal chest pain, coughing, nausea, and generalized weakness for 15 days arrived at the hospital. The patient had a prior history of multiple joint pain, insidious in onset and gradually progressive, along with reflux of food and water and loss of appetite over the past six months. She had also undergone a hysterectomy 10 years ago.

The patient was initially suspected to have ischemic heart disease due to her chest pain, but further investigation revealed a Hill's grade II hiatus hernia and pericardial effusion. Coronary angiography and 2D echocardiography both showed that the coronaries in the epicardium were normal. However, the 2D echo showed that the right atrium was diastolic collapsed and there was mild pericardial effusion on the right side, which is why a pericardiocentesis was suggested.

The patient was then referred to the gastroenterology department for her reflux of food and water. An endoscopy was performed and showed a Hill's grade II hiatus hernia. However, the patient's symptoms persisted despite treatment, and she developed a persistent cough. The patient underwent a CT pulmonary angiography, which showed a soft tissue attenuation space-occupying lesion in the anterior mediastinum, pre-right para-tracheal region. This lesion moved the mediastinum to the left side and inferiorly, and the pericardium became thicker unevenly with mild pericardial effusion.

During the course of treatment, the patient's symptoms worsened with breathlessness and cough, and she was referred to a pulmonologist. The diagnostic test was done, which showed and clinically diagnosed the extra-pulmonary site as showing tubercular pericardial effusion. The patient was empirically started on the antitubercular therapy tab (AKT-4) due to clinical suspicion.

The physical examination revealed an overall poor condition, with a blood pressure reading of 130/90 mmHg, a heart rate of 110 beats per minute, an oxygen saturation level of 94 percent, and an absence of fever. After eating, there was discomfort and agony in the stomach. muffled heart sound on auscultation. The patient was referred to the cardiovascular thoracic surgery team based on the echocardiogram's findings. Pericardiocentesis was planned, and the patient's pericardial fluid showed approximately 25 ml of straw-colored, clear fluid labeled as pericardial fluid, with a tinge of red sediment seen. Cytomorphology suggested serous effusion with a low lymphoid cell infiltrate. An advice to correct the histopathology was given based on the imaging results, and a biopsy of the mass from the mediastinum, pre-paratracheal region, was taken. The biopsy revealed that the section from the given biopsy mass showed epithelial cells with elongated nuclei and a spindle shape with scanty cytoplasm arranged into a swirling pattern, which favored the diagnosis of benign thymoma on histopathology. The team suggests to the patient that hernia repair and thymectomy can be done at the same time, but the patient and relatives deny it. They are more concerned about the first thymectomy. After determining the need for surgery, the patient was prepared accordingly. The thymectomy procedure was performed via a median sternotomy, resulting in the successful removal of the thymoma mass. The prescribed medical treatment consists of the following intravenous injections: ceftriaxone 1gm twice daily; Amikacin 500 mg once daily; pantoprazole 40 mg once daily; Ondansetron 4 mg once daily; furosemide 20 mg twice daily and Dexamethasone 8 mg three times daily. There were no other complications. The patient's medical history and diagnostic tests suggest a complex medical condition, including benign thymoma, hiatus hernia, and

tubercular pericardial effusion.

During this critical case scenario, nurses play a pivotal role in the initial assessment, recognizing the need for further critical care. The critical role of nursing during this perioperative phase and in the overall management of this medical condition plays an important role. In the pre-operative phase, we gave the patient education regarding thymectomy and hernial repair procedures, explained the surgical process, potential risks, and expected outcomes, and obtained their consent. Ensured the importance of perioperative instructions such as fasting and medical management. Psychological support has been given to reduce anxiety and encourage open communication, allowing her to express her fears and expectations. Collaborated with the surgical team to ensure all necessary preoperative assessments and preparations were completed. Verified the patient's medical history, allergies, and any potential risk factors. In the intraoperative phase, I assisted in positioning for the surgery, ensuring comfort and safety. Maintain sterility during the surgical procedure and anticipate the surgeon's needs during the surgery. Post-operative care is the most important and crucial part of surgical management where patients need immediate recovery. This includes intensively monitoring vital signs in the immediate postoperative period. For pain management, pain medications were administered promptly to manage postoperative pain effectively based on the level of pain with the help of a pain numerical assessment scale, and the score was 7/10. The assessed level of pain followed post-op Days 0-3. Examine and oversee the wound care, make dressing changes, ensure the surgical site remains clean and infection-free, and educate her on self-care practices to promote optimal wound healing. Rehabilitation and transition to recovery are vital parts where nurses encourage and assist her in early ambulation to prevent complications such as deep vein thrombosis, enhance overall recovery, and collaborate with physiotherapy for a comprehensive rehabilitation plan. Provided ongoing psychological support, addressed emotional needs, and promoted a positive outlook recovery phase, served as a liaison as a liaison between different healthcare providers to ensure a holistic approach to patient care. As a nurse, I conducted a continuous assessment of the patient's physical and emotional wellbeing throughout her medical journey. By actively participating in the perioperative phase, the nurse contributes significantly to patient well-being and ensures a patient-centered, comprehensive approach to care. The nurse's role extends beyond clinical tasks to encompass advocacy, support, education, and coordination in this complex medical scenario.

### **Thymoma Diagnosis and Treatment Decision: A Patient's Perspective**

Receiving the diagnosis of benign thymoma was an unexpected turn in my journey toward recovery. The moment the healthcare team shared the histopathology results, revealing the intricate details of the thymoma, was met with a mix of emotions like confusion, fear, and a longing for clarity. As a patient, understanding the diagnosis becomes a quest for knowledge and reassurance. The healthcare team played a pivotal role in guiding me through this process. They patiently explained the nature of thymoma, the significance of the histopathology finding, and the implications for my overall health. The subsequent collaborative decision-making process marked a crucial phase in my treatment journey. Engaging in conversation with the healthcare team, we collectively deliberated on the best course of action. The prospect of hernial repair and thymectomy was presented as a comprehensive approach to address both the diagnosed benign thymoma and the pre-existing hernia. They involved me and my family in the decision-making process, weighing the benefits and risks, considering the impact on daily life, understanding the potential outcomes, and ensuring I felt empowered to make informed choices about my own care. They provided detailed explanations and answered my and my family's questions. Choosing to prioritize thymectomy over hernial repair, understanding that both procedures were essential, reflected my trust in the expertise of healthcare professionals. The nurses, akin to wise caretakers, played a pivotal role in postoperative care, offering guidance and support like trusted companions. The support and understanding provided by the healthcare team profoundly influenced my perspective, transforming the challenges into opportunities for healing and growth. Fortunately, my condition recovered, and I felt better than before.

### **DISCUSSION**

The presented case of a 58-year-old woman with retrosternal chest pain, coughing, nausea, and generalized weakness posed a considerable diagnostic challenge due to the intricate interplay of symptoms originating from multiple organ systems. As tuberculosis is the most common cause, empirically started

antitubercular therapy along with steroids on clinical suspicion. The patient took Anti tuberculous therapy for 9 months and was asymptomatic until June 2021. In June 2021, she again presented with exertional dyspnoea but had no fever or chest pain. This case presents a rare clinical picture of thymoma with an initial presentation of hiatus hernia and pericardial effusion. This is a rare presentation after a thorough review of the literature. Thymoma is usually an incidental finding identified on imaging in asymptomatic patients. However, pericardial effusion presenting this early in thymoma without any evidence of primary disease is rare (Jha *et al.*, 2023).

This a typical presentation contributes to a delay in suspecting thymic pathology, diverting attention towards more preventive conditions like hiatus hernia and pericardial effusion. While pericardial effusions are generally uncommon, when they arise, they are usually asymptomatic and due to benign causes. The patient in this case demonstrated a rare cause of pericardial effusion—malignant extension from a thymic tumor. This case report illustrated an important clinical scenario to be aware of when assessing pericardial effusions in the settling of a mediastinal mass. This patient had very strong geographic and risk factors for TB-induced pericardial effusion with minimal risk factors, such as smoking or tobacco use. Grounding in a particular diagnosis in this case caused them to overlook this potential differential diagnosis and delay treatment. In terms of thymic malignancies, surgery remains the treatment of choice for operable thymic tumors. However, no such literature has demonstrated pericardial effusion secondary to malignant extension from a thymic tumor (Whiting *et al.*, 2021).

A 27-year-old women presented to emergency department with worsening chest discomfort, non-productive cough and fever over the past 2 weeks. examinations revealed pericarditis, prompting pericardiocentesis and treatment with intravenous antibiotics and a pericardial drain. Despite interventions, her condition deteriorated, and she passed away on the fifth day of hospitalization. This case highlights the potential complication of advanced thymoma, including purulent pericardial effusion with chest discomfort and cough. Early diagnosis and management of purulent pericarditis are crucial due to the malignancy's life-threatening prognosis. (Bakhriansyah *et al.*, 2022).

On the other hand, a hiatus hernia is a condition that occurs when a section of the stomach extends into the chest cavity by passing through the diaphragm. There is no direct causal relationship between a hiatus hernia and thymoma. However, it is feasible for someone who has a history of GERD brought on by a hiatus hernia to also develop Barrett's esophagus. Barrett's esophagus is a well-recognized complication of gastroesophageal reflux disease, and it is a premalignant condition characterized by changes in the cells that lining of esophagus, leading to an increased susceptibility to esophageal cancer.

Although the precise reason for the thymoma is not entirely understood, it is believed to be connected to the thymus gland's aberrant cell development and division. In some cases, thymoma may be associated with autoimmune disorders, such as myasthenia gravis. It is conceivable that GERD-related persistent esophageal inflammation and irritation and Barrett's esophagus may contribute to the development of thymoma through a complex mechanism that involves immune system dysfunction and abnormal cell growth. However, it is important to note that thymoma is a rare condition, and the vast majority of people with hiatus hernia or GERD do not develop thymoma.

The case of a 66-year-old women with type B2 thymoma illustrate the complexities of managing recurrent disease post-initial curative treatment. Despite complete resection followed by extended thymectomy, an intratracheal recurrence occurred seven year later. Surgical intervention and postoperative radiotherapy led to disease control, with the patient remaining progression-free nine months post-operation. This highlights the importance of long-term surveillance and a multidisciplinary approach in managing thymoma recurrence. Ongoing research into novel therapeutic modalities is crucial for refining treatment strategies and improving outcomes in recurrent thymoma cases (Fukuyama & Funakoshi, 2023).

Our case shares frequent similarities with other cases; it is hard to find similar instincts in the reported cases of thymoma accompanied by hiatus hernia and pericardial effusion. To the best of our knowledge, no prior report has been published regarding this; either the patient had thymoma with pericardial effusion or, rarely, hiatus hernia. Several symptoms related to the adjacent structure could be triggered by the local growth and invasion of the tumor, including pericardial effusion and hiatus hernia.

In terms of surgical approach, minimally invasive techniques such as video-assisted thoracoscopic surgery (VATS) have gained popularity for thymectomy, offering advantages such as shorter hospital stays, decreased postoperative pain, and faster recovery compared to traditional open approaches. Furthermore, VATS has been associated with comparable oncologic outcomes, making it a feasible option for selected patients with thymoma.

Radiation therapy is not recommended for patients with stage I or II disease who have undergone a complete resection of the tumor. Radiation therapy is recommended for patients with unresectable disease or incompletely resected disease. Chemotherapy is recommended for patients with locally advanced, advanced, or recurrent thymoma (Thymoma, 2024).

The surgical management of thymoma continues to evolve, driven by advancements in surgical techniques, adjuvant therapies, and our understanding of tumor biology. By incorporating recent data and adopting a multidisciplinary approach, we can further optimize treatment outcomes and improve the quality of life for patients with thymoma. Further research is warranted to validate emerging treatment strategies and enhance our ability to effectively manage this rare but clinically significant malignancy.

Although there is no direct correlation between these three conditions, they can coexist in the same patient due to their proximity in the chest cavity. Additionally, the symptoms of this condition can overlap, leading to diagnostic challenges and delayed treatment. This presentation shows the importance of a thorough evaluation and following up with a patient with a complex medical condition. This case highlights the diagnostic challenges that can arise when multiple conditions coexist with atypical and refractory symptoms, such as benign thymoma, hiatus hernia, and tubercular pericardial effusion. It also emphasizes the need for multidisciplinary management, as the patient was referred to a different department. Finally, it highlights the effectiveness of surgical intervention, in this case, thymectomy, as part of the management plan for benign thymoma.

## CONCLUSION

In conclusion, this case shows how complicated it can be for a patient to have more than one condition, such as a benign thymoma, pericardial effusion, and hiatus hernia, all of which are rare and have symptoms that aren't typical for them. The timely and accurate diagnosis of each condition is crucial for appropriate management and improved patient outcomes. In this clinical scenario, the lessons drawn from this case contribute to the collective knowledge aimed at enhancing diagnostic acumen and improving patient outcomes in the realm of rare and concurrent conditions. Therefore, a multidisciplinary approach and thorough evaluation are necessary to ensure prompt diagnosis and appropriate treatment. This article benefits nursing by highlighting the importance of their role in recognizing complex medical conditions, providing comprehensive patient education, and contributing to the overall management and care of patients with challenging diagnostic dilemmas.

## Conflict of Interest

The authors declare that they have no conflict of interests.

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