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RESEARCH ARTICLE

THE HIDDEN CULPRIT: CHRONIC CONSTRICTIVE PERICARDITIS UNVEILING PULMONARY HYPERTENSION - A CASE REPORT

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Abstract

A rare illness known as chronic constrictive pericarditis (CCP) causes the pericardium to thicken and fibrose, which restricts heart function. On the other hand, pulmonary hypertension (PH) is a chronic condition marked by increased pulmonary arterial pressure and pulmonary vascular resistance that eventually results in right ventricular failure and mortality. Due to the non-specific clinical presentation of CCP and PH, it can be simple to ignore this rare and difficult diagnosis. Here, we provide a case study of a 47-year-old woman who experienced severe dyspnea and had previously experienced three miscarriages, the most recent of which had happened two months before her presentation. The patient was identified as having CCP and PH after a thorough evaluation and inquiry. This case study seeks to highlight the importance of a high index of suspicion for CCP and PH in patients presenting with dyspnea and a history of pregnancy-related complications. Our case report emphasizes the significance of taking chronic constrictive pericarditis into account in individuals who have right ventricular failure and unexplained dyspnea. Early detection and quick pericardiectomy treatment can significantly improve symptoms and outcomes. To manage cardiovascular risk factors and keep an eye out for any potential recurrence of symptoms, long-term follow-up is required.

Introduction:-

Chronic constrictive pericarditis (CCP) is a rare condition characterized by the thickening and fibrosis of the pericardium, leading to the restriction of cardiac function. Pulmonary hypertension (PH), on the other hand, is a progressive disorder characterized by elevated pulmonary arterial pressure and pulmonary vascular resistance, leading to right ventricular failure and death. The coexistence of CCP and PH is a rare and challenging diagnosis, and can be easily overlooked due to its non-specific clinical presentation[1].

Here, we present a case report of a 47-year-old female patient who presented with severe dyspnea and a history of three miscarriages, with the most recent occurring two months prior to her presentation. Through thorough evaluation and investigation, the patient was diagnosed with CCP and PH. This case report aims to highlight the importance of a high index of suspicion for CCP and PH in patients presenting with dyspnea and a history of pregnancy-related complications.

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Furthermore, we will review the current literature on the pathophysiology, clinical presentation, diagnosis, and management of CCP and PH, in order to increase awareness of this rare and complex condition among healthcare professionals. The early recognition and appropriate management of CCP and PH can significantly improve patient outcomes and quality of life, highlighting the importance of timely diagnosis and intervention[2].

Case Repot

A 47-year-old woman presented to the emergency department with severe dyspnea, fatigue, and a history of three miscarriages, with the most recent one occurring two months prior to her presentation. Her vital signs included a blood pressure of 140/80 mmHg, heart rate of 110 bpm, respiratory rate of 28 breaths/min, and oxygen saturation of 86% on room air. Upon admission to the emergency department, the patient was immediately placed on high-flow oxygen via a non-rebreather mask, and her oxygen saturation improved to 92%.

Physical examination revealed jugular venous distention, bilateral lower extremity edema, and bibasilar crackles on lung auscultation. Electrocardiogram (ECG) showed a right bundle branch block and electrical ventricular hypertrophy, raising the suspicion of pulmonary embolism. The chest X-ray showed a globular heart shadow, suggestive of cardiomegaly (Figure 1).

During the initial evaluation, the patient's laboratory tests revealed mild elevations in inflammatory markers, including a slightly elevated C-reactive protein (CRP) level and erythrocyte sedimentation rate (ESR). Additionally, the patient had a mild normocytic anemia, with a hemoglobin level of 11.5 g/dL. Other laboratory values, including liver and renal function tests, electrolytes, and coagulation studies, were within normal limits. While the findings were not definitive, they did suggest some degree of inflammation and a possible chronic process. These results, along with the patient's clinical presentation, further supported the initial suspicion of pulmonary embolism or other acute cardiopulmonary pathology.

Given the patient's history of multiple miscarriages and presenting symptoms of severe dyspnea, fatigue, and tachycardia, pulmonary embolism was initially suspected as the primary diagnosis. This was further supported by clinical findings, including an elevated D-dimer level and the presence of a right bundle branch block and electrical ventricular hypertrophy on electrocardiogram. All of this led us to perform a computed tomography scan with a pulmonary angiogram.

However, the computed tomography pulmonary angiogram was negative for embolism but it did reveal extensive calcifications and thickening of the pericardium. The pericardial thickening was diffuse and measured up to 3 to 4 centimeters in thickness, giving the same density as the bone on computed tomography (Figure 2-3). Low cuts of the CT through the high part of the abdomen revealed the presence of peritoneal effusion. This finding, along with the patient's history of three miscarriages, raised concerns for possible underlying malignancy or other systemic processes.

The computed tomography scan of the chest revealed extensive calcifications and thickening of the pericardium. The pericardial thickening was diffuse and measured up to 3 to 4 centimeters in thickness, giving the same density as the bone on computed tomography. The echocardiography confirmed de diagnosis showing signs of constrictive pericarditis with right heart disfunction and with immobile free walls.

The initial management of the patient's dyspnea and right ventricular failure included the administration of diuretics, which effectively improved her clinical status. Interestingly, follow-up echocardiography revealed a significant decrease in pulmonary artery pressures, suggesting that the thickened and calcified pericardium was contributing to pulmonary hypertension. This finding provided further evidence for the diagnosis of chronic constrictive pericarditis and supported the decision to proceed with surgical intervention.

Following the diagnosis of chronic constrictive pericarditis based on imaging and clinical findings, the need for invasive diagnostic testing, such as right heart catheterization, was carefully considered. However, given the clear findings of thickened and calcified pericardium on CT and echocardiography, and the significant improvement in pulmonary pressures with diuresis, the decision was made to forego further invasive testing.

This approach minimized the patient's risks of complications associated with invasive procedures and avoided additional healthcare costs. Instead, the focus was on timely surgical intervention to address the underlying cause of the patient's symptoms.

Ultimately, apericardectomy was planned, but the surgery was challenging due to the thickened and calcified pericardium. However, a successful pericardectomy was performed, and the pericardium was sent for histopathology.

The histopathology report confirmed the diagnosis of chronic constrictive pericarditis with evidence of tuberculosis origin. The patient had an uneventful recovery and was discharged with follow-up arrangements with a cardiologist.

Discussion:-

Chronic constrictive pericarditis is a rare condition characterized by the thickening and calcification of the pericardium, leading to impaired cardiac function and hemodynamic compromise. The diagnosis can be challenging and requires a high level of clinical suspicion, as the presenting symptoms are often nonspecific and may mimic other cardiac and pulmonary conditions[1].

In our case report, a 47-year-old female presented with severe dyspnea, fatigue, and a history of three miscarriages, which raised initial concerns for possible pulmonary embolism or other thromboembolic events. However, further imaging studies revealed thickened and calcified pericardium, ultimately leading to the diagnosis of chronic constrictive pericarditis of tuberculosis origin.

The literature suggests that chronic constrictive pericarditis may have a variety of etiologies, including tuberculosis, viral infections, autoimmune disorders, and idiopathic causes. In our case, tuberculosis was confirmed as the underlying cause of the condition[1, 3].

Imaging studies, including echocardiography and CT, play a crucial role in the diagnosis and management of chronic constrictive pericarditis. The echocardiogram findings in our case, such as the presence of a thickened pericardium, were consistent with previous reports in the literature. Additionally, the significant improvement in pulmonary artery pressures following diuresis and surgical intervention was also consistent with previous findings[2].

Invasive diagnostic tests, such as right heart catheterization, may be necessary to confirm the diagnosis and evaluate hemodynamic parameters in some cases. However, our case report demonstrated that in some instances, these tests may be unnecessary when imaging and clinical findings are clear and consistent[1].

Chronic constrictive pericarditis (CCP) can lead to the development of pulmonary hypertension through several mechanisms. The thickened, calcified pericardium can restrict diastolic filling of the heart chambers, leading to increased pressure within the heart and pulmonary circulation. This chronic pressure overload can cause structural changes in the pulmonary arteries, resulting in pulmonary hypertension[2].

In addition, CCP can also cause direct compression of the pulmonary vessels, further contributing to pulmonary hypertension. The presence of pulmonary hypertension in patients with CCP can worsen symptoms and increase the risk of complications.

Therefore, evaluation and management of pulmonary hypertension are crucial in patients with CCP, as appropriate treatment can improve symptoms and outcomes. This may include the use of medications such as pulmonary vasodilators and diuretics, as well as addressing underlying causes such as CCP through pericardiectomy.

Long-term follow-up is essential in patients with chronic constrictive pericarditis, as the risk of recurrence remains even after surgery. It has been reported that up to 10% of patients may develop recurrence of symptoms, even after undergoing pericardiectomy. Close monitoring and regular echocardiography are recommended to detect any potential recurrence or complications.

Additionally, patients with chronic constrictive pericarditis may also be at increased risk for other cardiovascular diseases, including heart failure and arrhythmias. Therefore, appropriate management of cardiovascular risk factors, such as hypertension and diabetes, is crucial for optimal outcomes.

In summary, chronic constrictive pericarditis is a rare but potentially serious condition that requires a high level of clinical suspicion and a multimodal approach to diagnosis and management. Our case report highlights the importance of considering this diagnosis in patients presenting with nonspecific symptoms and the potential role of imaging studies in guiding management decisions[4].

Figures

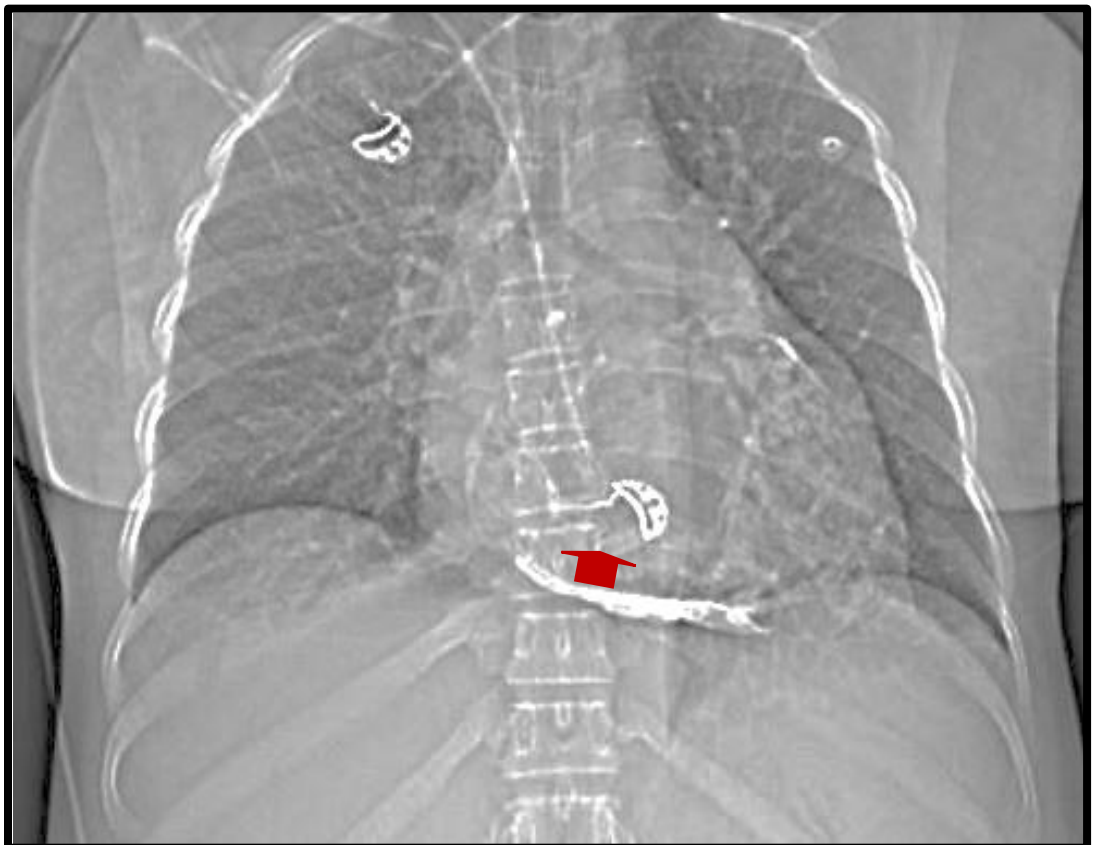

Figure 1:- Chest X Ray Showing Calcifications In The Pericardium (Red Arrow).

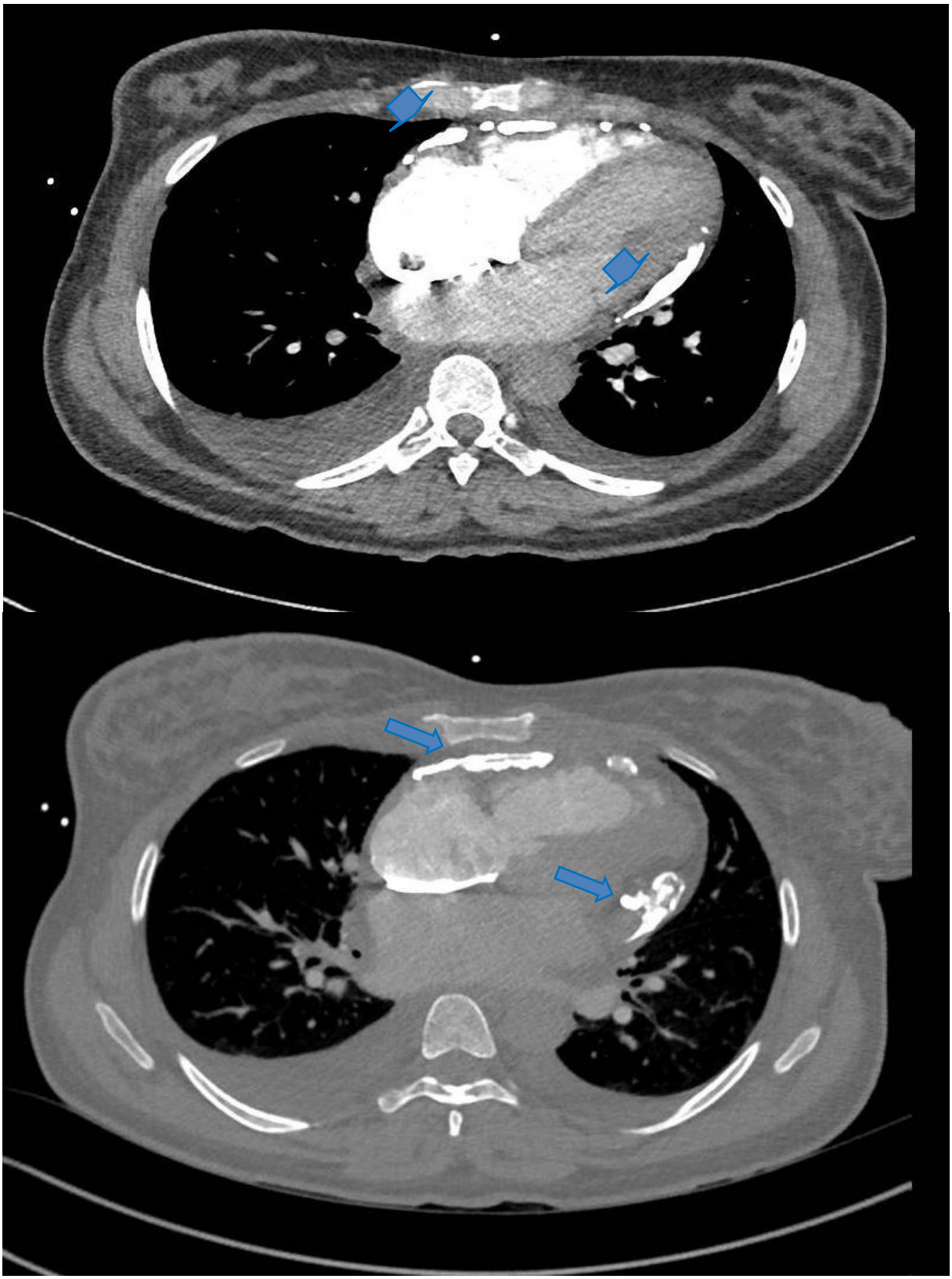

Figure 2:-CT Scan Showing Calcifications In The Pericardium (Blue Arrows).

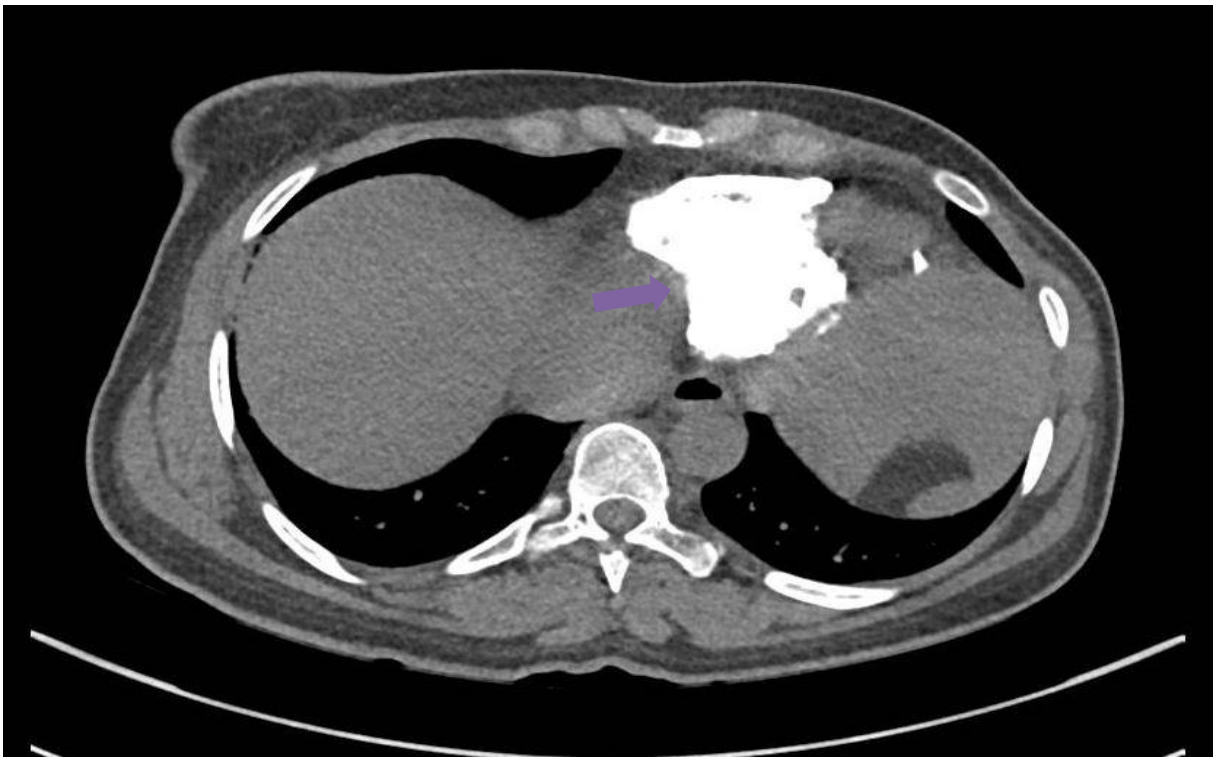

Figure 3:-CT Scan Showing Calcifications In The Basis Of The Heart Ine The Low Part Of The Pericardium (Purple Arrow).

Conclusion:-

In conclusion, this case report highlights the importance of considering chronic constrictive pericarditis in patients with unexplained dyspnea and right ventricular failure. Early diagnosis and prompt treatment with pericardiectomy can lead to significant improvement in symptoms and outcomes. Long-term follow-up is necessary to monitor for any potential recurrence of symptoms and to manage cardiovascular risk factors.

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