

Troponin elevations related to non-acute coronary syndrome.

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Introduction

Troponin is a protein found in cardiac muscle cells that plays a critical role in regulating muscle contraction. It is commonly used as a diagnostic marker for acute coronary syndrome (ACS), such as myocardial infarction (heart attack), due to its release into the bloodstream when cardiac muscle cells are damaged. However, troponin elevations can also occur in the absence of ACS, known as non-ACS troponin elevations. In this article, we will explore the causes, diagnosis, and management of non-ACS troponin elevations [1].

Causes of non-acute coronary syndrome troponin elevations

Non-ACS troponin elevations can be caused by a variety of conditions that affect the heart, such as myocarditis (inflammation of the heart muscle), pericarditis (inflammation of the sac around the heart), and heart failure. Troponin elevations may also occur due to non-cardiac conditions, such as sepsis (a severe infection), pulmonary embolism (a blood clot in the lungs), and renal failure (kidney disease).

Myocarditis is a condition that can cause inflammation of the heart muscle, leading to the release of troponin into the bloodstream. Myocarditis can be caused by viral infections, bacterial infections, and autoimmune disorders. Symptoms of myocarditis include chest pain, fatigue, and shortness of breath, which may mimic ACS. Pericarditis is another condition that can cause troponin elevations. It is caused by inflammation of the sac surrounding the heart, known as the pericardium. Pericarditis can be caused by viral infections, autoimmune disorders, and certain medications. Symptoms of pericarditis include chest pain, which may be sharp and worsened by breathing, coughing, or swallowing [2].

Heart failure is a condition where the heart is unable to pump blood effectively, leading to fluid buildup in the lungs and other organs. In severe cases of heart failure, troponin levels may become elevated due to the damage to the heart muscle. Symptoms of heart failure include shortness of breath, fatigue, and swelling in the legs and ankles. Sepsis is a life-threatening condition caused by a severe infection. In sepsis, the body's response to the infection can cause damage to multiple organs, including the heart. Troponin elevations can occur in sepsis due to the damage to the heart muscle. Symptoms of sepsis include fever, rapid heart rate, and confusion [3].

Pulmonary embolism is a condition where a blood clot travels to the lungs and blocks blood flow. This can lead to damage to the heart, which may cause troponin elevations. Symptoms of pulmonary embolism include chest pain, shortness of breath, and coughing up blood. Finally, renal failure can also cause troponin elevations. In renal failure, the kidneys are unable to remove waste products from the body, leading to a buildup of toxins. This can lead to damage to the heart muscle, which may cause troponin elevations. Symptoms of renal failure include fatigue, swelling in the legs, and difficulty breathing [4].

Diagnosis of non-acute coronary syndrome troponin elevations

The diagnosis of non-ACS troponin elevations requires a careful evaluation of the patient's medical history, physical examination, and laboratory tests. The first step in the evaluation is to rule out ACS as the cause of the troponin elevation. This may involve obtaining an electrocardiogram (ECG) to look for signs of myocardial infarction, such as ST-segment elevation or depression.

If ACS is ruled out, the next step is to identify the underlying cause of the troponin elevation. This may involve additional laboratory tests, such as a complete blood count (CBC), kidney function tests, and tests for infectious diseases. Imaging tests, such as echocardiography or cardiac MRI, may also be performed to evaluate the structure and function of the heart. In cases where the cause of the troponin elevation is unclear, a cardiac catheterization may be performed to directly visualize the coronary arteries and assess for any blockages or abnormalities. This can help determine if there is an underlying cardiac condition that requires treatment [5].

Conclusion

Troponin elevations can occur in a variety of conditions beyond ACS, such as myocarditis, pericarditis, heart failure, sepsis, pulmonary embolism, and renal failure. The diagnosis and management of non-ACS troponin elevations require a careful evaluation of the patient's medical history, physical examination, and laboratory tests. Treatment depends on the underlying cause of the troponin elevation and may involve medications, lifestyle changes, or supportive care. Close monitoring of troponin levels and other laboratory values is necessary to evaluate the response to treatment and assess for any complications.

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Received: 19-May-2023, Manuscript No. AAINIC-23-99681; Editor assigned: 23-May-2023, Pre QC No. AAINIC-23-99681(PQ); Reviewed: 06-Jun-2023, QC No. AAINIC-23-99681;

Revised: 12-Jun-2023, Manuscript No. AAINIC-23-99681(R); Published: 19-Jun-2023, DOI:10.35841/ainic-6.3.150

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