

Prediction of Acute Coronary Syndrome (ACS) and How it is Treated?

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DESCRIPTION

Acute Coronary Syndrome (ACS) is a syndrome caused by decreased blood flow in the coronary arteries, which causes part of the heart muscle to fail or die. The most common symptom is centrally located chest pain, which frequently radiates to the left shoulder or angle of the jaw, is crushing, and is accompanied by nausea and sweating. Many people with acute coronary syndromes have symptoms other than chest pain, especially women, the elderly, and those with diabetes mellitus.

Acute coronary syndrome is classified into three types based on the duration of symptoms, the presence of Electrocardiogram (ECG) changes, and the results of blood tests: ST elevation myocardial infarction (38%), non-ST elevation myocardial infarction (38%), and unstable angina (38%).

In general, unstable angina occurs when symptoms last less than 30 minutes. Acute myocardial infarction is diagnosed when symptoms last more than 30 minutes. Stable angina, which develops during physical activity or stress and resolves at rest, should be distinguished from ACS. In contrast to stable angina, unstable angina strikes unexpectedly, often at rest or with minimal exertion, or at lower levels of exertion than the individual's previous angina. Because it indicates a new problem in a coronary artery, new-onset angina is also considered unstable angina.

Signs and symptoms

Chest pain is the most common symptom of critically low blood flow to the heart, manifesting as tightness around or over the chest and (often but not always) radiating to the left arm and the left angle of the jaw. This may be accompanied by diaphoresis (sweating), nausea, vomiting, and shortness of breath. In many cases, the sensation is atypical, with pain manifesting itself in unusual ways or even being completely absent (which is more likely in female patients and those with diabetes). Some people may experience palpitations, anxiety, or a sense of impending

doom, as well as a feeling of being critically ill. Because it is not specific for ACS, the description of chest discomfort as pressure has small utility in aiding diagnosis.

Diagnosis

In the setting of acute chest pain, the electrocardiogram is the investigation that most reliably distinguishes between various causes. The ECG should be performed as soon as possible, preferably in the ambulance. If this indicates acute heart damage, immediate treatment for a heart attack, such as angioplasty or thrombolysis, is recommended. Many potential causes of chest pain, the patient usually has a number of tests in the emergency department, such as a chest X-ray, blood tests (including myocardial markers such as troponin I or T, and H-FABP and/or a D-dimer if a pulmonary embolism is suspected), and telemetry.

Treatment

Aspirin, clopidogrel or ticagrelor, nitroglycerin, and morphine are frequently used to treat patients with suspected ACS. The benefits of other analgesics, such as nitrous oxide, remain uncertain. When an ECG shows either a new ST elevation or a new left or right bundle branch block, angiography is advised. It doesn't seem that extra oxygen is helpful unless the person has low oxygen levels. Thrombolytics may be given or primary coronary angioplasty may be carried out if the ECG shows alterations that are suggestive of myocardial infarction (ST elevations in certain leads, a new left bundle branch block, or a true posterior MI pattern). In the first, a drug is injected into the patient to promote fibrinolysis, which stops blood clots blocking the coronary arteries. Twelve hours after the start of the pain, a blood test for cardiac troponins is typically conducted. If this is positive, coronary angiography is often done right away because it is highly indicative of an impending heart attack. A treadmill exercise test or a thallium scintigram may be recommended if the troponin test is negative. The ECG shows no indication of ST segment elevation. The risk of subsequent ACS is decreased by taking statins within the first 14 days of an ACS.

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