

## Assessment Screening of chest pain in primary setting: **Review Article**

### **Abstract:**

Chest pain can be caused by a variety of illnesses, ranging from benign and self-limiting to significant or life-threatening. Before a doctor examines more benign reasons, a workup must focus on ruling out significant pathology. The words "dull," "deep," "pressure," and "squeezing" are commonly used to describe visceral discomfort. Visceral pain generally has a diffuse distribution pattern, making it difficult for the patient to pinpoint a precise location. chest discomfort accounts for 1.5 percent of all consultations in primary care. The age group 45 to 64 years has the highest prevalence of chest pain consultations. Patients with suspected Acute coronary syndrome (ACS) should be diagnosed and treated as soon as feasible. While most patients are sent to the hospital, an electrocardiogram (ECG) is the sole examination necessary in primary care. In this review we will be looking at chest pain incident in primary care, and also we'll be making overview to the etiology and diagnosis of the disease.

### **Introduction:**

Chest pain can be caused by a variety of illnesses, Without over-testing and overtreating individuals with less significant causes of chest pain, accurate identification of life-threatening and major causes of chest pain is required. Knowing the pre-test likelihood of various causes of chest discomfort is the first step in clinical diagnosis. [1]Visceral pain can also refer to discomfort in other parts of the body caused by nerves running through somatic nerve fibres on their way to the spinal cord. Ischemic heart discomfort might affect the left or right shoulder, mouth, or left arm, for example. [2] in a studies that looked at chest pain presentation in primary care About 40% of people with chest pain have musculoskeletal reasons, whereas only 12% have stable angina, 3% have acute cardiac ischemia (including myocardial infarction), and fewer than 1% have pulmonary embolism. In these groups of primary care out-patients, no incidences of aortic dissection were reported. Patients with aortic dissection are more likely

to present to the emergency room because of the intensity of their symptoms. [1,3-6].

Patients with suspected ACS should be diagnosed and treated as soon as feasible. While most patients are sent to the hospital, an electrocardiogram (ECG) is the sole examination necessary in basic care. Troponin testing should only be ordered in the primary care environment to assess patients with suspected ACS. If needed, aspirin, glyceryl trinitrate, and oxygen may be used as an initial therapy. If ACS is suspected as the origin of symptoms, immediate referral is essential for conclusive risk stratification. [7]

In response to the pressures that chest pain assessment has placed on the health system, numerous nations have created chest pain assessment protocols and services to provide more effective and cost-efficient means of dealing with chest pain evaluation and care. The Rouen decision rule for myocardial infarction (MI) and the Wells score for pulmonary embolism are two examples of risk stratification for life-threatening causes of chest discomfort. These guidelines are primarily intended for usage in an emergency room situation. They will require some tweaking to make them relevant to primary care, because the spectrum of causes of chest pain differs from that seen in emergency rooms. Noncardiac chest pain (NCCP) is a term used to describe a type of chest pain that is not life threatening and is not diagnosed in emergency rooms. [8]

Up to 15% of individuals with chest pain in primary care have coronary artery disease (CAD), which includes angina pectoris and myocardial infarction, and this number rises to 22% in emergency rooms and 28% in cardiology clinics. However, diagnosing CAD in individuals who complain of chest discomfort is challenging. Despite these challenges, current recommendations say that a clinical examination alone may be adequate to confirm or rule out the diagnosis of CAD in individuals with stable chest discomfort. The initial stage in this clinical assessment should be a clinical history and physical examination, which will lead future diagnostic investigations. Many patients who have been referred for further tests are now being offered expensive studies, some of which require ionising radiation exposure. In terms of resources and clinical outcomes, both unneeded tests and failure to identify CAD are significant challenges. [9-15]

### **Etiology:**

Visceral pain generally has a diffuse distribution pattern, making it difficult for the patient to pinpoint a precise location. Patients may frequently move their hand over a greater region when asked to point with one finger where they experience pain.[2]

The least significant causes of chest discomfort include musculoskeletal diseases (e.g., costochondritis, Tietze syndrome, and costosternal syndrome). A new research identified 1,212 people over the age of 35 who reported with chest discomfort to a primary care clinic and followed them for six months to ascertain the final diagnosis. Age and gender were shown to be ineffective in determining whether pain is musculoskeletal. The lack of cough, stinging pain, palpable pain, and localised muscular tension are the four greatest independent indicators. There is a chance that chest wall discomfort is the reason in individuals who have three or four of these characteristics. [1]

The left or right shoulder, jaw, or left arm may be affected by ischemic heart discomfort. Symptoms such as nausea and vomiting can also indicate the presence of visceral discomfort. Diaphragmatic discomfort can also affect the shoulders. Patients can generally point to a specific location with somatic pain, which is more precise than visceral discomfort. It's also less probable that somatic pain would relate to other portions of the body. Sharp, stabbing, and probing are common adjectives for somatic pain. [2]

There was a significant difference in the diagnostic case mix presented in general practise compared to emergency departments or secondary care in a research that looked at different etiologies of chest pain in primary care. it included 172 papers in a prior systematic review on the accuracy of symptoms and indicators for coronary heart disease (CHD). Patients presenting with chest discomfort in secondary care or emergency rooms were the subjects of the vast majority of these investigations. The percentage of patients with a stable CHD as the underlying ailment was 52 percent (median), whereas the percentage of cases with an ACS or MI was 37 percent (median). In primary care, the relative rates of stable CHD and ACS/MI were much lower. [16]

### **Epidemiology:**

During office hours, chest discomfort accounts for 1.5 percent of all consultations and 4% of all new episodes. The age group 45 to 64 years has the highest

prevalence of chest pain consultations, with significant disparities in how men and women present it. Differentiating less common but urgent diagnoses of chest discomfort, such as acute coronary syndrome or pulmonary embolism, from more prevalent but less urgent diagnoses is the first priority for GPs (such as gastroesophageal reflux, musculoskeletal pain or anxiety). To create a working hypothesis/diagnosis, GPs rely on a combination of history taking, medical history, physical examination, and previous experience. Rule out of acute coronary syndrome (ACS) in patients with acute-onset chest pain, as well as rule out of coronary artery disease(CAD) in patients with intermittent-type chest pain, are the most common reasons for referral. [17-23]

### **Assessment of chest pain:**

**History & Physical Examination:** The examination of chest discomfort begins with a thorough history, as it does with other workups. Begin by gaining a thorough knowledge of their issue. [2]

- In addition to asking when the pain began, physician should find out what the patient was doing at the time. Was it exercise that caused the ache, or were they at rest?
- Is the patient able to pinpoint the pain with one finger or is it diffuse?
- How long did the discomfort last?
- Allowing the patient to express his or her anguish in his or her own terms.
- Factors can aggravate or alleviate the condition: It's critical to figure out what's causing the discomfort to get worse. Is there a physical component to it, and is it linked to eating or breathing? Is there a positional aspect to this? Remembering to inquire about new training regimens, sports, and lifting techniques. Inquiring about the drugs they've tried.
- Radiation: This might be a sign of visceral discomfort.
- How many times do they have to go through this pain? How long is it going to stop?
- A complete set of vitals should be taken, including blood pressure (BP) readings in both arms.
- Examining the skin for any lesions (shingles)
- Examining the neck for jugular venous distension (JVD), particularly during inhalation (Kussmaul sign)

- Palpate the chest for repeatable discomfort and crepitus.
- Examination of the heart
- Lung examination
- Examine of the abdomen
- Unilateral swelling, calf discomfort, edoema, and symmetric, equal pulses in the extremities
- Symptoms like: Breathing problems, Nausea and vomiting are common effects. Diaphoresis, Cough, Dyspepsia, Edema, Fever, Swelling or discomfort, recent illness

Unfortunately, GPs' assessment of patients with chest pain based solely on symptoms and signs ('clinical gestalt') is insufficient for correctly identifying or eliminating stable angina and, in particular, ACS (sensitivity of 69 percent and specificity of 89 percent ). GPs are fully aware of their own limitations and use a low referral threshold as a result. A verified clinical risk score might help doctors make better decisions by predicting the likelihood of an unfavourable diagnosis based on patient features, symptoms, and other easily available data. [17]

clinical decision criterion for diagnosing acute MI in outpatients with chest pain and normal or near-normal ECG readings has also been established and validated (i.e., nonspecific ST or T wave changes not suggestive of ischemia or strain). Male sex, age above 60, pressure-type pain, and pain radiating to the arm, shoulder, neck, or jaw were all significant predictors of acute MI. Patients with none or one of these findings had a risk of acute MI of less than 1%. Patients without bibasilar rales, hypotension, unstable angina, or ECG abnormalities are at low risk and can be triaged to an observation unit, according to a clinical criterion established in the emergency department setting for triage of patients with chest pain. This rule, however, has not been prospectively verified in a primary care population. [1]

### **Research Data & Discussion:**

in a study that was done on 118 general practitioners (GPs) in the Netherlands and Belgium out of the 22,294 patient that were registered. Chest discomfort was the reason for 281 (1.26 percent) visits to the doctor (mean age for males 54.4/women 53 years). Acute coronary syndrome (ACS) was suspected in 38.1 percent of patients during consultation, 40.2 percent of patients were referred to

secondary care, and 512 diagnostic tests were conducted by GPs and contacted specialists in this cohort of 281 individuals. The most common functional (26.1 percent) and final diagnoses were musculoskeletal pain (33.1 percent). Final diagnoses of potentially life-threatening conditions (such as myocardial infarction) accounted for 8.4% of all chest discomfort cases. A significant discrepancy between working and final diagnosis was discovered in 23.1 percent of patients, and a serious condition was initially overlooked by the GP in 0.7 percent of instances. [24]

The German Sächsische Epidemiologische Studie in der Allgemeinmedizin 2 collected cross-sectional data from randomly selected patients. In all, 270 participants from the SESAM 2 trial sought medical help for chest discomfort (3 percent of all consultations). People above the age of 45 were more likely to experience chest discomfort. Physical examination, ECG at rest, and blood parameter measurement were the most prevalent diagnostic procedures. In the vast majority of cases, the doctors scheduled a follow-up appointment or recommended medication. The transition project identified 8117 patients who reported chest discomfort at a rate of 44.5 per 1000 patient years (1.7 percent of all consultations). Physical examination was likewise the most prevalent diagnostic procedure, with medical advice being the most important treatment option. [25]

When treating patients with chest discomfort, general practitioners (GPs) must assess if there is a serious underlying condition that requires immediate treatment or whether a "wait and see" method may be used. Only 12-15 percent of primary care patients have chest discomfort due to coronary heart disease (CHD). The primary care physician general practitioner (GP) remains the primary point of contact for the majority of patients with chest discomfort. The accuracy of GPs' preliminary diagnoses after obtaining the patient's history and doing the basic clinical examination determines the success of their gatekeeping duty, i.e., detecting patients with CHD and safeguarding them from over-diagnosis and treatment. This question has only been addressed in a few research thus far. Additional data from a large and consistently recruited sample of chest pain patients in primary care is needed on GPs' therapeutic decisions after an assumed CHD diagnosis. [9]

Patients over 45 years old had a significantly higher consultation rate for chest discomfort as a cause for the visit. This can be explained by an increasing incidence of chronic conditions (e.g., musculoskeletal or cardiovascular), as well as an increased rate of healthcare seeking among patients aged 60 and older, as well as an increasing frequency of cardiovascular check-ups among these patients. Multiple studies have comparable findings, such as an almost doubling of chest pain frequency from younger persons to the elderly, as demonstrated in the Dutch Transition Project. [25-27]

### **Conclusion:**

Chest pain can be caused by a variety of illnesses, ranging from benign and self-limiting to significant or life-threatening. It's one of the most common reasons for the primary care consultations. The role of GPs is to assess the disease, find any underlying condition causing the pain, rule out any serious illness and to treat self-limiting cases, the role of gatekeeping of GPs is important and depends on diagnosis accuracy therefore a systemized approach to the diagnosis is always recommended.

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