

Enzymatic and non- enzymatic bio marker in Early diagnosis of MI

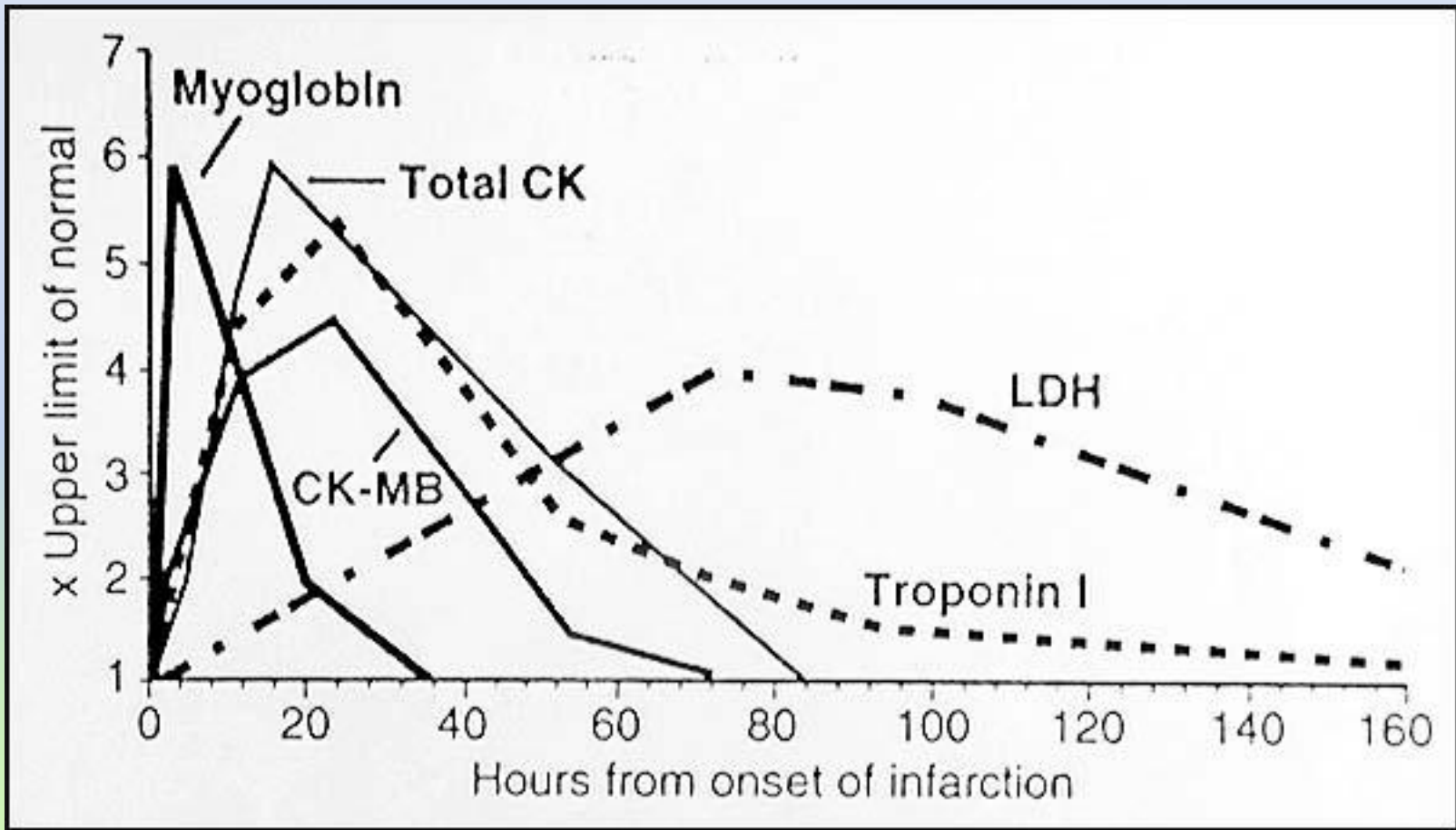
A acute myocardial infarction (AMI) is the leading cause of death in developed countries; however, hospital mortality from this cause has been declining over the last three decades. This reduction in mortality coincides with the improvement in health and living standards and with new treatments like thrombolysis

And new interventions like percutaneous coronary interventions (PCI) and coronary artery bypass grafting(CABG).

**The success of treatment rests on:
identification of patients in the very
early stages of AMI**

The ideal characteristics of a marker of myocardial injury are: it should be abundant in the myocardium and not present in other tissues. This gives it a high specificity for the myocardium and reduces the rate of false positive results.

Cardiac markers play an important role in the detection of AMI when the patients history and ECG are non-diagnostic



Cardiac biomarkers

- **CK-MB is the heart specific isoenzyme and has been the gold standard enzyme for the diagnosis of AMI.**

Myoglobin

- **A protein found in striated skeletal and cardiac muscles, myoglobin is an early marker of injury to muscle tissue. A rise in myoglobin concentration is detectable in blood as early as 1 to 3 hours after the onset of MI symptoms and can be used to rule out the diagnosis in the 2 to 6 hours period after The onset of symptoms.the disadvantage of myoglobin is that it is not cardiac specific.**

It can be increased in trauma, diseases of the skeletal muscles, and renal failure. Myoglobin concentrations for adult men range from 30 to 90 ng/dL; women typically demonstrate concentrations of less than 50 ng/mL. Myoglobin can be measured by latex agglutination, enzyme-linked immunosorbent assay (ELISA), immunonephelometry, and fluoroimmunoassay. A spot test using immunochromatography is also available.

troponins

- **Troponins is a complex of three proteins that bind to the thin filaments of striated cardiac or skeletal muscle and regulated muscle contraction. The complex consist of the following :**
- **Troponin T (TnT)**
- **Troponin I (TnI)**
- **Troponin C (TnC)**

Troponin I remain elevated in blood for 4 to 10 days after MI and thus is valuable for late presenting patients.

**Heart-type acid-binding protein test
in the prehospital diagnostic test of
acute myocardial infarction.**

Copeptin the release pattern of copeptin in patients with AMI with immediate rise after onset of chest pain and decrease toward physiologic levels within 5 days.

Myeloperoxidase, but not C-reactive protein, predicts cardiovascular risk in peripheral arterial disease, although C-reactive protein is a predictor of inflammatory changes .

Previous Cardiac markers:

1- Sgot(Ast).

2- LDH.

3- Total cpk.