Overview

Useful For
Exclusion diagnosis of acute myocardial infarction

Method Name
Chemiluminometric Immunoassay

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required

Patient Preparation: For 12 hours before this test do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 2 mL

Collection Instructions:

1. Serum gel tubes should be centrifuged within 2 hours of collection.

2. Red-top tubes should be centrifuged and aliquoted within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send a Cardiovascular Test Request Form (T724) with the specimen.

Specimen Minimum Volume
1 mL

Reject Due To

| Gross hemolysis | Reject |

Specimen Stability Information
Clinical and Interpretive

Clinical Information

Troponin is a complex that regulates the contraction of striated muscle. It consists of 3 subunits (C, T, and I) that are located periodically along the thin filament of the myofibrils. Troponin I inhibits actomyosin ATPase.

Troponin I is an inhibitory protein and exhibits in 3 isoforms: cardiac muscle, slow-twitch skeletal muscle, and fast-twitch skeletal muscle. The cardiac form of troponin I has 31 amino acid residues on its N-terminal, not present in the skeletal forms, which allow for specific polyclonal and monoclonal antibody development. The cardiac specificity of this isoform improves the accuracy of diagnosis in patients with acute or chronic skeletal muscle injury and possible concomitant myocardial injury.

Troponin I is the only troponin isotope present in the myocardium and is not expressed during any developmental stage in skeletal muscle. Troponin I is released into the bloodstream within hours of the onset of symptoms of myocardial infarction or ischemic damage. It can be detected at 3 to 6 hours following onset of chest pain with peak concentrations at 12 to 16 hours, and remains elevated for 5 to 9 days.

Reference Values

< or =0.04 ng/mL

Reference values have not been established for patients <17 years of age.

Interpretation

There are, on occasions, elevations of cardiac troponin T (cTnT) which we use clinically which can be due to skeletal muscle disease. One way to unmask such elevations is to measure cardiac troponin I (cTnI), which will be normal in that circumstance. In addition, at times there are interferences that can cause spurious increases or decreases in cTnT values. Conceptually, these same interferences can occur with cTnI but in any given case, the likelihood of having both assays be confounded in that way is highly unusual. Thus, potential false-positives would be unmasked by a normal cTnI and false-negatives by an elevated value.

A reference range study was conducted using the ADVIA Centaur TnI-Ultra assay based on guidance from the Clinical and Laboratory Standards Institute (CLSI) Protocol C28-A2.25. The study, which used 1,845 fresh serum, lithium heparin plasma, and EDTA plasma samples from 648 apparently healthy individuals ranging from 17 to 91 years of age, demonstrated a 99th percentile of 0.04 ng/mL (mcg/L).(1)

Cautions

A positive troponin result is not always indicative of myocardial infarction. Other conditions resulting in myocardial cell damage can contribute to elevated cardiac troponin I levels. These conditions include, but are not limited to, myocarditis, cardiac surgery, angina, unstable angina, congestive heart failure, and noncardiac-related causes, such as, renal failure and pulmonary embolism.

Clinical Reference

1. Package insert: Siemens Centaur XP, TnI, 04744371 Rev H, 2008-09


Performance

Method Description
This is a chemiluminometric immunoassay. Troponin I (TnI) is measured using an automated, sandwich chemiluminescent immunoassay on the Advia: Centaur XP instrument. The signal (Binary Lite) reagent is a polyclonal goat anti-TnI antibody, which is labeled with acridinium ester and 2 biotinylated, mouse-monoclonal antitroponin I antibodies. TnI attached to paramagnetic particles (solid phase) competes with the TnI in the sample for binding to the monoclonal antibody. A direct relationship exists between the amount of TnI in the patient sample and the amount of relative light units detected by the system. (Package insert: Siemens Centaur XP, TnI. 04744371 Rev H, 2008-09)

PDF Report
No

Day(s) and Time(s) Test Performed
Monday through Friday; 6 a.m.- 4 p.m.

Analytic Time
Same day/1 day

Maximum Laboratory Time
2 days

Specimen Retention Time
7 days

Performing Laboratory Location
Rochester

Fees and Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification
This test has been cleared or approved by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.
Test Definition: TPNI
Troponin I, S

CPT Code Information
84484

LOINC® Information

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