Lab Data Interpretation

Tests Associated with Cardiac Disorders

Definition

- Cardiac diagnostic tests are laboratory and clinical investigations used to assess heart structure and function, diagnose heart diseases, and monitor treatment.

Objectives

- Diagnose heart diseases.
- Assess severity of cardiac disorders.
- Monitor treatment response.
- Detect heart muscle damage.
- Evaluate cardiovascular risk.

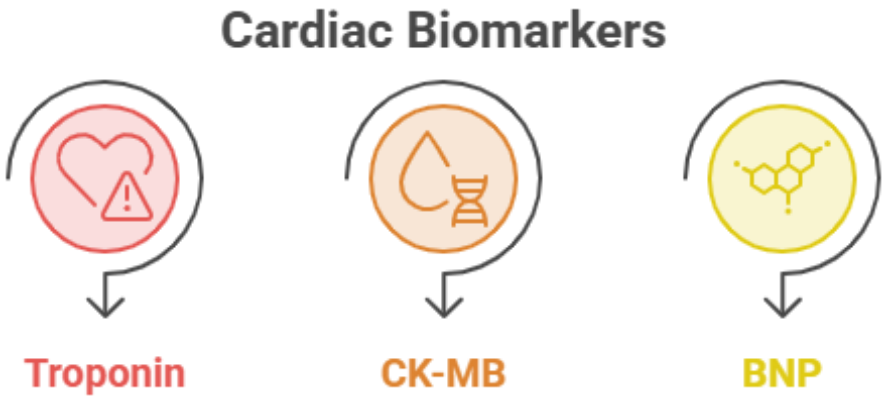
Objectives of Cardiac Tests

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Cardiac Biomarkers

Cardiac biomarkers are substances released into the blood when the heart muscle is damaged.



1. **Troponin (Troponin I and Troponin T)**

   Definition

   - Troponins are proteins present in heart muscle cells.
   - They are released into the bloodstream during heart muscle injury.

   Normal Values

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- Usually very low or undetectable.

Increased Levels

- Myocardial infarction (heart attack).
- Severe cardiac injury.

Clinical Significance

- Troponin is the most specific marker for heart muscle damage.
- It is widely used for diagnosing myocardial infarction.

2. Creatine Kinase-MB (CK-MB)

Definition

- CK-MB is an enzyme found mainly in heart muscle.

Increased Levels

- Myocardial infarction.
- Cardiac muscle injury.

Clinical Significance

- Helps assess cardiac muscle damage.
- Often used along with troponin testing.

3. B-Type Natriuretic Peptide (BNP)

Definition

- BNP is a hormone released by the heart during increased pressure and volume overload.

Increased Levels

- Heart failure.
- Cardiac dysfunction.

Clinical Significance

- Helps diagnose and monitor heart failure.

Lipid Profile

Definition

- A lipid profile measures blood lipids and helps assess the risk of cardiovascular diseases.

Parameter	Normal Value	Clinical Significance
Total Cholesterol	< 200 mg/dL	High levels increase heart disease risk
LDL (Bad Cholesterol)	< 100 mg/dL	High levels increase atherosclerosis risk

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HDL (Good Cholesterol)	> 40 mg/dL (M), > 50 mg/dL (F)	Higher levels are protective
Triglycerides	< 150 mg/dL	High levels increase cardiovascular risk

Electrocardiogram (ECG)

Definition

- ECG records the electrical activity of the heart.

Clinical Significance

- Detects arrhythmias.
- Identifies myocardial infarction.
- Assesses cardiac conduction abnormalities.

Pulmonary Function Tests (PFTs)

Definition

- Pulmonary Function Tests assess lung function by measuring airflow, lung volume, and gas exchange.

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Objectives

- Assess lung function.
- Diagnose respiratory disorders.
- Determine disease severity.
- Monitor treatment response.

Objectives of Pulmonary Function Tests

- To assess lung function.
- To diagnose respiratory diseases.
- To determine disease severity.
- To monitor treatment response.
- To evaluate respiratory disability.

Important Pulmonary Function Tests

1. Forced Vital Capacity (FVC)

Definition

- FVC is the total volume of air that can be forcefully exhaled after a deep inhalation.

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Clinical Significance

- Reduced values may indicate restrictive lung disease.

2. Forced Expiratory Volume in One Second (FEV_1)

Definition

- FEV_1 is the volume of air exhaled during the first second of forced expiration.

Clinical Significance

- Reduced values are seen in obstructive lung diseases.

Examples

- Asthma.
- Chronic Obstructive Pulmonary Disease (COPD).

3. FEV_1/FVC Ratio

Definition

- This ratio compares the amount of air exhaled in one second with total exhaled air.

Normal Value

- Approximately 70–80%.

Clinical Significance

- Reduced ratio suggests obstructive lung disease.

4. Peak Expiratory Flow Rate (PEFR)

Definition

- PEFR measures the maximum speed of expiration.

Clinical Significance

- Commonly used to monitor asthma.

5. Total Lung Capacity (TLC)

Definition

- TLC is the total amount of air present in the lungs after maximum inhalation.

Clinical Significance

- Helps differentiate obstructive and restrictive lung disorders.

Common Disorders Evaluated by PFTs

A. Obstructive Lung Diseases

- Asthma.
- COPD.

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