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Short Notes on Cardiovascular Biomarkers

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Description

Cardiac biomarkers appear in your blood after your heart has been subjected to extreme stress and becomes injured due to a lack of oxygen. This could be the result of a heart attack. However, these levels can be elevated for a variety of reasons. Biomarker levels are frequently used to determine the size of a heart attack and how seriously your heart was affected. These cardiac biomarkers can help to identify a heart attack. Cardiovascular troponin, By far the most commonly used biomarker is this protein. It has the highest sensitivity known.

It enters the bloodstream shortly after a heart attack. It also remains in your bloodstream for days after all other biomarkers have returned to normal levels. Troponin T and troponin I are the two types of troponin that can be measured. Troponin I is highly specific to the heart and remains elevated for a longer period of time than creatinine kinase-MB [1-3]. According to current American Heart Association (AHA) guidelines, this is the best biomarker for detecting a heart attack. The AHA advises limiting the use of other biomarkers. CK, CK-MB, and myoglobin are examples.

Creatinine kinase enzyme (CK). This enzyme can also be measured multiple times over the course of a 24-hour period. If you've had a heart attack, it'll usually at least double. However, because CK levels can rise in a variety of conditions other than a heart attack, it is not very specific. CK-MB. This is a CK subtype. It is more sensitive for detecting heart damage caused by a heart attack. The level of CK-MB rises 4 to 6 hours after a heart attack. However, it is usually restored within a day or two. As a result, it is ineffective in determining whether your recent chest pain was caused by a heart attack. Myoglobin, this is a small oxygen-storing protein. It is occasionally measured. Myoglobin is sometimes measured alongside troponin to aid in the diagnosis of a heart attack. It is also insufficient for detecting a heart attack.

Cardiovascular disease (CVD) is a leading cause of death worldwide, and its prevalence is increasing in comparison to previous decades, owing in part to the world's ageing population. Atherosclerotic CVD begins in childhood and progresses over time, allowing enough time for screening and early detection of the condition. Over the last 30 years, advances in biomarker research and developments related to CVD have resulted in more sensitive screening methods, a greater emphasis on early detection and diagnosis, and improved treatments, resulting in more favorable clinical outcomes in the community. However, the use of biomarkers for various purposes in CVD remains an important area of research that scientists have explored over the years, and many new developments are being made.

As a result, a detailed description of all CVD biomarkers currently in use or being researched for future use in the field of cardiovascular medicine is beyond the scope of any review article. We do not intend to repeat information from previous exhaustive reviews on biomarkers, but rather to highlight key statistical and clinical issues, with an emphasis on methods to evaluate the incremental yield of biomarkers [4,5], including their clinical utility, which is required before any putative novel biomarker is used in clinical practise. Furthermore, we will summarise information on recent novel heart failure biomarkers in current practice that are being evaluated before they can be used in clinical trials, as well as their impact on clinical outcomes.

Biomarkers are important in disease evaluation as well as the development of drug treatments for disease conditions. Biomarkers can even help in determining the correct doses for any given drug in the late stages of drug development. Biomarkers have recently been considered as surrogate end points for clinical trials. Biomarkers are traditionally classified according to their intended use, which can be screening, diagnostic, or prognostic.

Biomarkers are classified as prognostic, pharmacodynamic, or predictive biomarkers in precision medicine. A prognostic biomarker is one that predicts the likely outcome of a disease condition in people who are not being treated or who are being treated with conventional therapies. A predictive biomarker, on the other hand, is one that can be used to identify individuals who are most likely to respond to a given therapy or to differentiate candidates who can be considered for specific targeted therapies.

Conflict of Interest

None.

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