

Biomarkers and their Role in Healthcare System

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Abstract

Biological markers are the measures of a specific biological state. By definition, a biomarker is "A characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes or pharmacological responses to a therapeutic intervention."

Keywords: Therapeutic • Biological

Introduction

The Biomarker discovery may be a medical term describing the method by which biomarkers are discovered. Currently available biomarkers, like those used to diagnose myocardial infarction (e.g., cardiac troponins), were identified within the course of targeted physiologic studies. Similarly, basic investigation of diseases has largely been characterized by studies of isolated molecules in cellular systems.

A wide range of biomarkers are available today and being used in different domain of research and diagnosis. Laterza used a worldwide survey, and during this issue of Clinical Chemistry they describe their discovery of potential new markers. Now begins the long road toward validation of those markers in clinically relevant human cohorts. Every biological event/system ranging from physiological processes to metabolic system has its unique biological markers. Few of those are relatively easy to identify and quantify which enables those to be an active part of routine medical investigations. Now a days there are several popular biological markers are used in general medical health checkup like, pulse rate, blood pressure, and level of cholesterol, glucose and triglycerides. Physical measurements like body mass index (BMI), waist-to-hip ratio and body weight are most commonly used for assessing obesity and metabolic disorders.

Considering any parameters as biological marker should exhibit certain characteristics which make it most suitable for checking a particular pathophysiological condition. Following are few important features those should be in an ideal marker:

- Easy to handle and Safe in use
- Cost efficient to cover major population of across the economic conditions

- Adjustable with treatment
- Consistent against gender and ethnicity

Biomarkers are unique in their occurrence and are used in predicting serious illnesses like as cardiovascular disease and diabetes. Each biological marker indicates whether there a related disease exists or not and further can be combined to provide a detailed depiction of a person's health.

The principles of biomarkers in disease have been exercised in screening, detection, diagnosis, possible treatments and monitoring of cancer. Traditional, anti-cancer drugs used to kill cancer as well as the healthy cells both. But today by utilizing principles of biomarkers more specific and targeted therapies have been developed. These biomarker guided therapies/ drugs target cancer cells selectively and kill them without harming the healthy cells. These practices further minimize the risk of drug induced toxicity. In cancer research, genetic markers are more efficiently being used because genetic aberrations are very often in cancer development. Therefore some promising DNA or RNA markers may be helpful in the detection and treatment of cancers.

Their efforts so far suggest tantalizing novel markers of critical diseases and therefore the before the beginning of an extended journey toward the identification of a clinical biomarker and the arduous transition from the research environment to routine clinical practice.

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