Monitoring the cardiac state

UniQ PIIINP RIA – a proven and reliable tool

The measurement of PIIINP as a marker of cardiac extra cellular matrix turnover has value as prognostic predictor of death and hospitalization. It has been shown that in patients with congestive heart failure, high baseline serum PIIINP was associated with an increased risk of death and death+hospitalization.

Collagen in the heart

Type III collagen (PIIINP) is a major support protein in all soft tissues, including the heart. Cardiac fibroblasts increase the production of collagen when the heart is exposed to a variety of injuries, such as myocardial infarction, pressure overload, and myocarditis. Cardiac fibrosis due to excessive formation of collagen may be responsible for abnormal tissue stiffness and altered cardiac function during heart failure. Cardiac fibrosis is a major reason for diastolic dysfunction and pumping capacity, and it may contribute to the progression of heart failure and sudden death[8].

Simple blood test

PIIINP is a serological marker which can easily be determined with the Aidian's UniQ PIIINP RIA assay. Serum samples need no pre-preparation and the antigen in the sample is very stable.

Monitoring & screening tool

Measurement of cardiac collagen turnover by use of serological markers has been shown to be a useful tool for monitoring cardiac tissue repair and fibrosis in clinical situations. High serum levels of PIIINP in patients with chronic heart failure receiving conventional therapy, including ACE inhibitors, was found to be associated with high mortality and hospitalization rates[8]. Moreover, markers of collagen turnover have been shown to be effective screening tools for diastolic dysfunction and heart failure with preserved ejection fraction[1].

Predictive & prognostic power

Atherosclerotic disease involves remodelling of the extracellular matrix in cardiac and vascular tissues. This process can be monitored by assaying plasma levels of matrix biomarkers such as PIIINP. PIIINP turnover rate has been reported to be increased in hypertension and after myocardial infarction. High blood PIIINP levels predict mortality, heart failure after a myocardial infarction, and increased risk of adverse outcomes in chronic heart failure[5].

Increased serum PIIINP measured in the subacute phase of myocardial infarction has been shown to provide clinical prognostic information after myocardial infarction[2]. Collagen markers analyzed in acute and subacute myocardial infarction phases enable to study the myocardial healing process and to predict left ventricular functional and volume changes[4].

Risk assessment

The measurement of PIIINP as a marker of cardiac extra cellular matrix turnover has value as prognostic predictor of death and hospitalization. It has been shown that in patients with congestive heart failure, high baseline serum PIIINP was associated with an increased risk of death and death+hospitalization[7]. In another study it has been shown that PIIINP is the only biomarker independently associated with death and coronary heart failure hospitalization[3]. Moreover, in patients with acute myocardial infarction PIIINP serum levels were shown to be correlated with infarct size and left ventricular dysfunction[6].

Scar formation

Synthesis of interstitial collagen is essential for scar formation after myocardial infarction, and serum PIIINP has been shown to be a useful indicator in this process. The size of the myocardial infarct scar can be estimated from the difference between the serum PIIINP concentrations on the day of admission and that on day 4 after admission[6].

References

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