

7. EXPLORING THE ROLE OF N-TERMINAL PRO-BRAIN NATRIURETIC PEPTIDE AS A DIAGNOSTIC BIOMARKER IN KAWASAKI DISEASE



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Introduction. Kawasaki disease (KD), also known as mucocutaneous lymph node syndrome, is an acute febrile illness of unknown cause that stands out as a unique and challenging pediatric vasculitis, characterized by acute systemic inflammation and the potential for developing coronary artery complications. The most serious challenge is the development of coronary artery aneurysms, which are the predominant cause of morbidity and mortality among pediatric patients. Presently, the identification of KD relies on the manifestation of clinical features and lacks a distinct diagnostic biomarker.

Aim of study. Exploring the relationship between serum N-terminal pro-brain natriuretic peptide (NT-proBNP) blood concentrations and patients with acute and hyper-acute phases of KD.

Methods and materials. Were analyzed articles available on online medical platforms such as PubMed Databases, Medscape and other scientific documents provided on Google Scholar. The most relevant 20 articles were selected and investigated, including case studies, which were published between 2014 and 2023.

Results. The primary pathogenic occurrence in KD involves the activation of the innate immune system, leading to elevated secretion of interleukins (IL) 1, 4, 6, 10, and tumor necrosis factor (TNF). Given the significant evidence of myocardial engagement (often as myocarditis) in KD, new investigations have concentrated on exploring cardiac biomarkers, including serum NT-proBNP - a biomarker, as well as a prohormone, released from the heart's ventricles in response to enhanced pressure and volume. It reflects cardiac stress and its significantly elevated levels may indicate myocardial dysfunction in children and infants with KD in acute and hyper-acute (≤ 4 days of fever, an insufficient duration for a conclusive diagnosis solely based on clinical criteria) phases of disease. In the acute phase of KD, NT-proBNP elevation primarily results from a combination of hemodynamic factors (myocardial stress due to pressure or volume overload and ventricular dysfunction) and non hemodynamic factors (myocardial inflammation, ischemia, and hypoxia). Higher NT-proBNP levels in the hyperacute phase are associated with an increased likelihood of coronary artery dilatation (CAD), which is a notable concern in KD. Furthermore, the lack of response to intravenous immunoglobulin (IVIG) therapy and the presence of coronary artery aneurysms (CAA) prove the elevated NT-proBNP levels, suggesting its prognostic utility.

Conclusion. NT-proBNP levels could serve as an alternative indicator for distinguishing Kawasaki Disease from other febrile and infectious conditions. Additionally, it may forecast the engagement of coronary arteries, enhancing diagnostic precision, especially in instances with incomplete diagnostic criteria.