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Diagnostic, prognostic and therapeutic relevance of assay of b-type natriuretic hormone and related peptides in children with congenital heart diseases

Cantinotti M, Storti S, Murzi B and Clerico

Monasterio and Scuola Superiore Sant'Anna, Italy

Background: The aim of this article is to review the diagnostic and prognostic relevance of measurement of Brain Natriuretic Peptide (BNP) and N-terminal pro-Brain Natriuretic Peptide (NT-proBNP) in pediatric patients with congenital cardiac diseases (CHD).

Methods: A computerized critical literature search in the National Library of Medicine using the keywords "BNP assay" and "NT-proBNP assay" + neonate/s and newborn/s was performed. We then refined the analysis to include only the studies specifically designed to evaluate the clinical usefulness of BNP and NT-proBNP assays in children with CHD.

Results: Several Authors suggested that BNP/NT-proBNP assay is clinically helpful as a diagnostic and prognostic marker for children with suspected CHD. BNP values are closely age-dependent, even in paediatric age. Unfortunately, accurate reference values of BNP and NT-proBNP assays for neonatal age only recently become available. As a result, the lack of homogenous and accurate decisional levels in the neonatal period greatly limited the clinical impact of BNP assay and also contributed to the production of conflicting results. Regardless of age, there is a great variability in BNP/NT-proBNP values among CHD characterized by different haemodynamic and clinical conditions. In particular, cardiac defects characterized by left ventricular volume and pressure overload usually show a higher BNP response than CHD characterized by right ventricular volume or pressure overload.

Conclusions: BNP and NT-pro BNP may be considered helpful markers in the integrated clinical approach for patients with CHD, especially in the neonatal age. BNP assay cannot replace cardiac imaging (including echocardiography, angiography and magnetic resonance), but provide independent, low cost and complementary information for the evaluation of cardiac function and clinical patient status.

Biography

Massimiliano Cantinotti has Accademic Degree in Medicine and Specialization in Cardiology at University of Pisa, Italy and have Scientipic Society Membership in Pediatric Cardiologist Consultant Fondazione Monasterio, Heart Hospital.