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CASE REPORT

Should first blood pressure measurement be performed in the newborn?☆

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Abstract Dilated cardiomyopathy is the most common form of cardiomyopathy and the main cause of cardiac transplantation in children and in adults. Infants and children have a wider spectrum of etiologies, hampering their identification. The most frequent initial manifestation of dilated cardiomyopathy is symptomatic heart failure during exercise or at rest (although many patients are asymptomatic). Some causes are potentially reversible, therefore the investigation should be carefully planned and immediately performed after diagnosis. In most children no cause is identified, which limits the targeted therapeutic approach and therefore the effectiveness of the treatment.

The authors present a case of dilated cardiomyopathy secondary to renovascular hypertension diagnosed in an infant with 3.5 month-old, highlighting the etiological investigation, treatment and evolution.

The authors present this case emphasising the fact that the arterial hypertension diagnose in infants is not always easy, questioning the current recommendations relating to an initial evaluation on blood pressure. We postulate that the assessment of blood pressure in newborns can detect early renovascular hypertension (and even other cardiovascular diseases) and help prevent the development of deleterious effects, including fatal episodes.

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PALAVRAS-CHAVE
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Deveremos avaliar a pressão arterial no recém-nascido?

Resumo A miocardiopatia dilatada é a forma mais comum de miocardiopatia e a principal causa de transplante cardíaco em idade pediátrica e em adultos. Os lactentes e as crianças apresentam etiologias de espectro mais alargado, embora a sua identificação seja mais difícil. A manifestação inicial mais frequente da miocardiopatia dilatada é a insuficiência cardíaca sintomática, em esforço ou repouso (embora muitos pacientes sejam assintomáticos). Como algumas das causas da miocardiopatia dilatada são potencialmente reversíveis, a investigação deve ser cuidadosamente planeada e feita imediatamente após o diagnóstico. Na maioria das crianças não é identificada uma causa, o que limita a abordagem terapêutica dirigida e, portanto, a eficácia do tratamento implantado.

Os autores apresentam um caso de miocardiopatia dilatada secundária a hipertensão arterial renovascular, diagnosticada numa lactente de 3,5 meses, e destacam a investigação etiológica, o tratamento instituído e a sua evolução.

Os autores salientam que o diagnóstico de hipertensão arterial no lactente nem sempre é fácil e questionam as atuais recomendações para início da medição da pressão arterial. Postulamos que a avaliação da pressão arterial em recém-nascidos pode detetar hipertensão arterial renovascular precoce (e mesmo outras doenças cardiovasculares) e ajudar a prevenir o desenvolvimento de efeitos deletérios, inclusive episódios fatais.

Introduction

Dilated cardiomyopathy (DCM) is the most common form of cardiomyopathy and the main cause of cardiac transplantation in children and adults.[1] DCM is a heterogeneous group of disorders with dilatation of the heart chambers and myocardial dysfunction as common phenotypes. Although these phenotypes occur in both adults and children, the underlying etiologies and prognosis differ depending on the age group.[2] The most common etiology in adults is coronary artery disease, although cases associated with inflammatory conditions, toxins (medication, alcohol and illegal drugs) and genetic defects have also been described. There is a broader spectrum of etiologies in infants and children, although these causes are more difficult to identify.[3] It is idiopathic in 66% of cases, and myocarditis (46%) and neuromuscular disease (26%) are among the most common known causes.[3] Inborn errors of metabolism and malformative syndromes are also causes in infants under 1 year of age.[4]

One North American study[3] reported that the annual incidence of DCM in children was 0.57 cases per 100 000, and that it was more common in males (0.66 vs. 0.47/100 000) and in infants than in older children (4.40 vs. 0.34/100 000). Previously, a Finnish study found a DCM incidence in children of 0.4 cases per 100 000 and a prevalence of 2.6 cases per 100 000 in Finland.[5] In the United Kingdom, the incidence rate is 0.87/100 000 in individuals >16 years of age.[6]

The most common initial manifestation in children with DCM is symptomatic heart failure, with effort or at rest (although many patients are asymptomatic).[4,7] Ventricular arrhythmias, atrioventricular block, syncope and sudden death may also occur.[4]

Because some of causes of DCM are potentially reversible, an extensive panel of investigations should be planned and performed immediately after diagnosis.[1] Nonetheless, most children do not have a known cause, which limits disease-specific therapies and, therefore, the efficacy of the treatment implemented.[3]

Description of the case report

Female infant with no significant personal history except for a drop in weight-for-age percentile from one month of age (50th percentile to 15th percentile). At 3 months of age, the parents reported onset of sweating and pale lips during feeding, which gradually worsened.

At age 3.5 months, she was brought to the emergency department due to an episode of hypotonia and moaning, interpreted as a brief resolved unexplained event. Fever and recent infection were denied and she had no family history of heart disease or sudden death. Physical examination found the patient to be in good general condition, with blood pressure (BP) at 112/81 mmHg (P>99), peripheral oxygen saturation at 99%, grade II/VI systolic murmur, and no organomegaly or peripheral edema. High BP was subsequently confirmed in all four limbs, with no significant difference among values. Complete blood count was normal and a blood chemistry panel showed normal transaminases, renal function and thyroid function. Brain natriuretic peptide was found to be high (2686.7 pg/ml).

A chest X-ray revealed cardiomegaly with no pulmonary congestion. An electrocardiogram showed sinus rhythm, normal QRS axis, no pathological Q waves and inverted T wave in LI, LII and LIII. An echocardiography found dilatation of the left chambers with global left ventricular dysfunction, left ventricular ejection fraction (LVEF) 36%, left ventricular systolic function (LVSF) 17% and moderate