www.jpnim.com Open Access eISSN: 2281-0692
Journal of Pediatric and Neonatal Individualized Medicine 2020;9(2):e090204
doi: 10.7363/090204
Received: 2019 Aug 27; revised: 2020 Mar 08; accepted: 2020 Apr 05; published online: 2020 May 31

Case report

Venous thrombosis in a 36-day-old infant with transposition of the great arteries and supraventricular tachycardia

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Abstract

Pediatric venous thromboembolism (VTE), although uncommon, can lead to serious morbidity and mortality. Cyanotic congenital heart diseases are one of the most common causes of VTE in children, especially when it is associated with other risk factors for thrombosis.

We therefore report a case of right femoral vein thrombosis in a 36-day-old infant with transposition of the great arteries who had supraventricular tachycardia and bronchopneumonia.

Keywords

Thromboembolism, congenital heart disease, transposition of the great arteries, supraventricular tachycardia, infant, bronchopneumonia.

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How to cite

Almuhyi RAH. Venous thrombosis in a 36-day-old infant with transposition of the great arteries and supraventricular tachycardia. J Pediatr Neonat Individual Med. 2020;9(2):e090204. doi: 10.7363/090204.

Introduction

Although the incidence of venous thromboembolism (VTE) is remarkably lower in children in comparison to adults, pediatric VTE is also gaining increased awareness because severe VTE may lead to serious morbidity and mortality in pediatric patients [1].

In children, the incidence of VTE is about 0.7-2.1 cases per 100,000 children [2]. The most prominent peak is in early infancy, accounting for up to 20% of pediatric VTE, a second peak during adolescence, with about 50% of VTE events occurring in children 11-18 years old [3]. Clinical presentation may vary from asymptomatic to life or limb threatening events [4].

Various symptoms of venous thrombosis result from vessels obstruction, stasis or decreased venous return, which leads to pain and swelling distal to the site of obstruction [5].

Most VTE events in children are secondary to conditions such as cancer, surgery, congenital heart disease (CHD), nephrotic syndrome and systemic lupus erythematosus (SLE) [6].

CHD is one of the main underlying conditions contributing to VTE in pediatric patients [7]; children with CHD are the largest pediatric patient group accounting for one third of children suffering from VTE [8].

Femoro-popliteal veins are the most common thrombosed segments in children [6].

We therefore report a case of right femoral vein thrombosis in a 36-day-old infant with transposition of the great arteries (TGA) who had supraventricular tachycardia and bronchopneumonia.

Case report

A 36-day-old male infant was brought to the ER with complaints of shortness of breath for 2 days. He was evaluated by his pediatrician the day before and diagnosed with chest infection; however, the shortness of breath increased during the last 4 hours before admission. He had cough with no fever or cyanosis.

Antenatal history was not relevant; he was born at term by normal vaginal delivery with no complications, no significant postnatal, past medical, or past surgical history. Family history was positive for CHD (first-degree cousin), and negative for hereditary thrombophilias.

Upon presentation to the ER he was conscious, dyspneic, tachypneic, with chest retraction and subcostal recession, tachycardia (HR 250 bpm); RR was 64 cycle/min, axillary temperature was 36.9°C.

On auscultation, he had bilateral crackles. His ECG showed narrow complex tachycardia and absence of P wave (supraventricular tachycardia) with HR up to 250/min. Cold water immersion was done with no response. Adenosine injection was given, there was response to the dose of 0.3 mg/kg, heart rate reached a maximum of 140/min, ECG showed normal QRS complex with a normal P wave.

His chest X-ray showed bronchopneumonia, his WBC was elevated (15,900/mm), HB 9 g/dl. Platelets, renal function test, random blood sugar were within normal.

The patient was kept on antibiotics; after 1 hour his condition deteriorated and cardiac arrest developed. Cardiopulmonary resuscitation (CPR) was done, the monitor showed ventricular tachycardia, synchronised cardioversion of 4 j/kg was administered, post cardioversion rhythm reverted to a normal rate reaching a maximum of 130/min, and his general condition improved. Three hours later, the infant developed bluish discoloration of the right lower limb; heparinization was considered with dosage of 20 IU/kg. Further investigation was done, Doppler study showed right femoral vein thrombosis, ECHO showed TGA. Unfortunately, the infant's parents refused further management and discharged against medical advice.

Discussion

The incidence of VTE in children has increased significantly over the past decade [2]. Over 80% of thromboembolism in children were on a background of severe preceding illness or other predisposing factors [9]. In this report, our patient had more than one underlying risk factor for VTE. One important factor is the cyanotic CHD (TGA). Patients with CHD are at high risk of developing thrombosis due to disruption of blood flow, CHD related coagulopathy, inflammation, and/or platelet activation secondary to extracorporeal circulation support required during open-heart surgery or as a bridge to recovery, which can increase thrombus formation [8].

Sani et al. reported a case of left lower limb gangrene in a child with TGA following diarrheal disease [10]. Another possible risk factor is arrhythmia. One of the documentary evidence that arrhythmias carry a risk for VTE was the first case reported by Matsuoka et al. They reported a neonate who developed cerebral sinovenous thrombosis as a complication of paroxysmal supraventricular tachycardia. Unlike our patient, their patient had no cardiac malformation [11].

An additional risk factor is infection [3]. In the first reported analysis of deep venous thrombosis

(DVT) in children, infections were the underlying predisposing factor in 7.3% of the cases [12, 13]. In a prospective Dutch study of VTE in childhood, infection was the most prevalent risk factor (46%) [13, 14].

Animasahun and Amoah reported a case of left forearm gangrene following septicaemia in a child with tetralogy of Fallot [15], sepsis was however not evident in our patient.

Declaration of interest

The Author declares that there is no conflict of interest. No funding support.

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