

Iatrogenic Right Atrial Masses Following an Umbilical Venous Catheterization: A Case Report

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Abstract

One of the most important complications of UVC placement in neonates is atrial thrombosis. We present a case of pre-term neonate had a thrombosis in right side heart was diagnosed in cardiac examination and then treated with anti-coagulant.

Keywords: umbilical venous catheter, Right Atrium, Thrombosis

Introduction

The portal vein thrombosis (PVT) is considered as one of the potential complications that might have happened following the placement of umbilical venous catheter (UVC) though there is no consensus on the main underlying interactions (1, 2). Its incidence varies between 4% to 40% based on the method of evaluation and level of clinical expertise (1-5). The presence of thrombosis is complicated if it is formed in unusual locations such as right atrium (6). Here we present a case of right atrial thrombosis in a preterm newborn following UVC.

Case

A preterm girl neonate with 30 weeks gestational age was born with cesarean section due to mother preeclampsia. Her birth weight was 900 gram and Apgar score was 3/10 in the first minute and 7/10 in 5 minutes. Her mother also had gestational diabetes mellitus. The baby was admitted in neonatal intensive care unit (NICU) because of prematurity and respiratory distress. At the admission, her color was pink and the limbs had normal flexion reflex. She suffered from a respiratory distress and a respiratory rate of 80 breaths/min with nasal flaring along with grunting were recorded. In auscultation, fine crackle and wheeze were heard. Cardiac examination revealed nonspecific findings with normal sinus rhythm on electrocardiogram (ECG). heart sounds were ok without any murmur. peripheral pulses were normal at the time. The blood pressure reading was 70/55, heart rate was 130. Abdominal examination was normal without any organomegalies.

After admitting in NICU, UVC was placed to initiate total parenteral nutrition (TPN) and antibiotic therapy. The primary chest X-ray (CXR) showed displacement of tip of the catheter in the right atrium (fig 1-A), therefore it was pulled out 1 cm (fig 1-B).

Nasal Continuous positive airway pressure (C-PAP) was administered and she did not need any surfactant therapy. In day 2 because of detecting a rising bilirubin to 13 mg/dl and a decreasing hemoglobin to 11.3 mg/dL, blood exchange was performed.

The baby gained weight properly and the serum therapy and antibiotics had been discontinued. On the 40th days of hospitalization, an echocardiography was requested due to hearing the murmur on cardiac examination. It revealed two masses located in IAS toward RAA (10×6.8mm) and in SVC to RA junction (14mm×4mm) (fig 3).

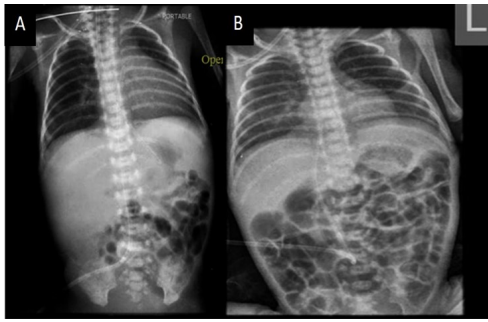


Figure 1: A) umbilical vein catheter is in the right atrium. B) umbilical vein catheter was pulled out 1 cm.

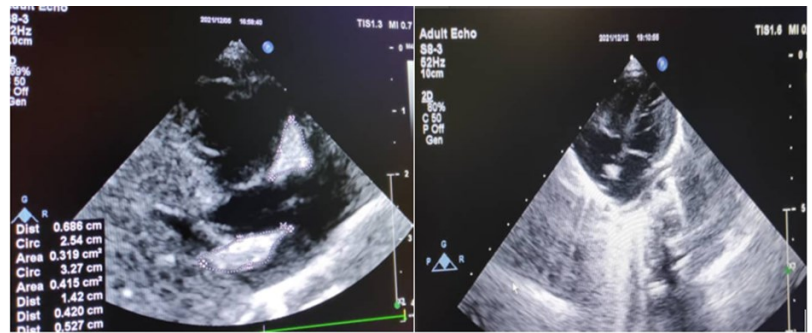


Figure 2: The mass on echocardiography.

Due to uncertainties regarding the nature of the two atrial masses blood cultures, ESR, CRP to rule out endocarditis. Moreover, broad-spectrum antibiotic regimen with imipenem, tazocin, and amphotericin B was initiated. Multidisciplinary team suggested to continue antibiotic therapy along with enoxaparin (1.5-unit SC every 12 hours) till the results of assessments. Blood cultures were negative, CBC was normal and ESR, CRP, U/C, CSF/C were all negative.

Follow up echocardiography done one week later showed no change in size of the masses. Moreover, with rolling out infectious sources, the antibiotics discontinued while the enoxaparin was continued. One month later, echocardiography showed a significant reduction in the size of masses decreased (3.5×5.5 mm) (fig4). The infant discharged with enoxaparin and follow up echocardiography every week.

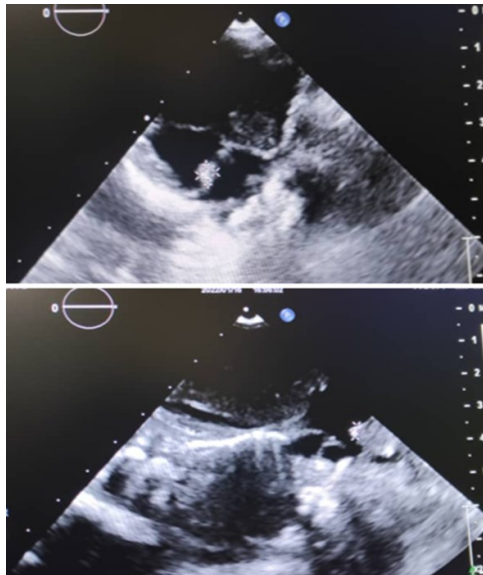


Figure 3: The mass decrease in size in follow up echocardiography.

Discussion and Conclusion

There are differential diagnosis for right atrial masses includes benign or malignant and primary or secondary (metastatic tumors), tricuspid valve vegetation and thrombosis. The commonly use of central venous catheters (CVCs) can lead to formation a thrombus likely in the case we describe with umbilical catheter was happened (7,8).

The incidence of these is undefined and they are diagnosed in a symptomatic patient not in a routine workup. A review from Canada reported a case of a 77-years old man who had a right atrial thrombus following pulmonary thromboembolism that originates from the tip of a peripherally inserted central catheter (PICC)(7, 8).

Risk factors of thrombosis formation are mechanical valves, right sided pacemaker leads, ventricular or atrial septal closure device and indwelling venous lines. Commonly, RA thrombosis are diagnosed with trans thoracic echocardiography (TTE) but trans esophageal echocardiography (TEE) can better define the size, site of attachment and mobility of it. After doing TTE in our patient due to finding a murmur in physical examination, first consider endocarditis but it ruled out due to negative lab data, good general appearance, no fever and normal vital signs. The focus on the tip of the umbilical catheter in CXR revealed that its position is in right atrium and then slowly pulled out 1 cm (8, 9).

When proved RA thrombosis, according to the morphology and risk of PTE, treatment is considered; anticoagulants or thrombotic agents or surgical thrombectomy. We started broad-spectrum antibiotics as the diagnosis of endocarditis and then enoxaparin started and continued when endocarditis ruled out.

In the follow up echocardiography the size of the mass was significantly reduced. The drug was continued and the follow up echo was done every week after discharge (8, 10).

Conflict of Interest

The authors declare no conflict of interest.

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