Incidental detection of idiopathic internal jugular vein thrombus in pediatric patient-lessons learnt!

Madam,

We report a child of acyanotic congenital heart disease in which internal jugular vein thrombosis (IJVT) was incidentally detected during central venous cannulation. This report highlights the importance of pre-procedural scan, which should not be confined only to or close to the puncture site, but should involve the entire length of internal jugular vein (IJV).

A 4-year-old child, a known case of peri-membranous ventricular septal defect (VSD) was admitted for surgical correction of the same. Preoperative history from mother, general physical examination, and vitals were unremarkable except for the shortness of breath for the past 1 year, the New York Heart Association (NYHA) class II.

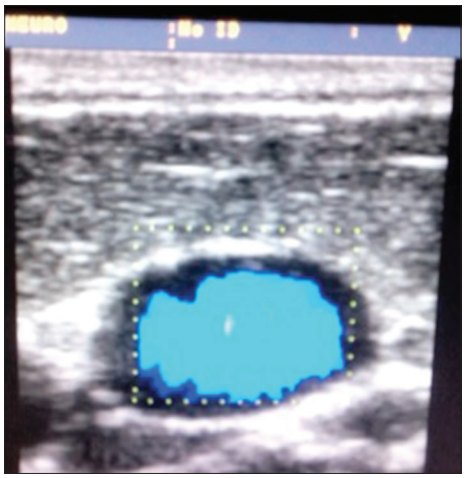

Figure 1: This figure shows normal color Doppler flow in internal jugular vein well above the thrombus

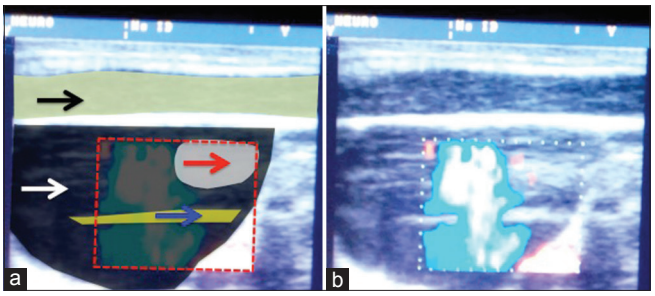

Figure 2: This figure (a) shows the thrombus (red arrow), valve (blue arrow), internal jugular vein (white arrow) and subcutaneous tissue (black arrow). The figure (b) shows hyperechogenic thrombus and absent color Doppler flow at the thrombus site

Auscultation revealed pan systolic murmur all over the precordium and bilateral normal breath sounds. The abdomen was soft with no organomegaly. All hematological investigations were within normal limits. Chest X-ray showed cardiomegaly (cardiothoracic ratio of 0.6) with prominent pulmonary vascular markings. Preoperative echocardiography findings were perimembranous VSD (Pm VSD) 4 mm with normal left ventricular (LV) function. The child was accepted under the American Society of Anesthesiologists Physical Status III (ASA-PS III).

On the day of surgery, child was shifted to operation theater after standard premedication with midazolam (100 mcg/kg) IV in the preoperative room under monitoring. Child was preoxygenated, anesthesia induced and trachea intubated using fentanyl (2 mcg/kg) and titrated dose of thiopentone to maintain hemodynamic stability. The left radial artery was cannulated using 22G catheter for continuous invasive blood pressure monitoring.

After preparing for the right IJV cannulation, the pre-procedural scan was done at puncture site. IJV cannulation was attempted on the right side with real-time ultrasound. The venous puncture was successful in the first attempt but there was resistance while passing the guide-wire. The guide-wire was removed and entire course of IJV was scanned to look for the cause. It revealed a normal IJV at the insertion site [Figure 1] but a large thrombus was detected in the right IJV, as the probe was moved down [Figure 2 and Video 1]. This was confirmed by both short and long axis view using color Doppler mode and non-compressibility. The left IJV was scanned and was found normal. The left IJV cannulation was successful. Surgical procedure was uneventful, and he was shifted to postoperative ICU for elective ventilation. Postoperatively, a radiologist confirmed thrombus in IJV and ruled out thrombus in other major vessels. He was started on heparin and the repeat ultrasound on the third day revealed no evidence of thrombus. Postoperative course was unremarkable and discharged.

IJVT is commonly reported in adult patients.[1] In pediatric age group it is an unusual disease, a very few IJVT cases have been reported till date, related to acute mastoiditis, head injury, disseminated tuberculosis, and Lemierre's syndrome.[2-4] In our case, retrospective history from child's mother revealed no previous history of any of the diseases to the child. The clinical symptoms may be absent or vague and misleading with varying clinical manifestations.[5] It can lead to complications like septic emboli and pulmonary embolism.[6] Our patient did not manifest any of the clinical symptoms or signs.

Patients with IJV thrombus may need to be on long-term oral anticoagulation therapy especially in cases where definite etiology causing coagulation disturbance exists. In our case, there were no other primary diseases, which were ruled out clinically. Also, our patient responded well with heparin within 3 days. The follow-up scans a month after discharge were also normal.

IJVT was diagnosed in our case because of difficulty in passing the guide-wire. This could also be due to posterior wall puncture and guide-wire hitting against valves. In our case, the difficulty was primarily due to thrombosis inside the lumen, which was diagnosed using duplex ultrasonography. If we fail to recognize the IJVT and exert unintentional force to thread the guide-wire, it could result in embolization of thrombus with disastrous consequences. Hence, we suggest that ultrasound should always be used whenever any problem is encountered during landmark guided central venous cannulation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published

and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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