Intravenous access: A different approach

Letters to Editor

Sir,

Vascular access is the cornerstone of medical therapy in the pediatric population and presents unique challenges. The common reasons for failure to have a proper venous access in children are (1) lack of patient cooperation, (2) very small size of many veins, (3) improper visualization of the course of vein especially in chubby babies with excessive subcutaneous fat and in dark-skinned babies, (4) choosing inappropriate size of the cannula. The various techniques of improving venous prominence and/or locating peripheral veins are (1) proximal application of ordinary rubber venous tourniquet or manual circumferential limb compression (less efficient and uncomfortable), (2) application of sphygmomanometer cuff inflated to just below the diastolic pressure (time-consuming), (3) local warming, (4) Topical nitroglycerine (risk of local skin reaction and headache), (5) ultrasonic guidance (not available in most centers and need skilled personnel) (6) venous distension device.

Here, I would like to suggest a different approach to venous cannulation in difficult situations, which has been used successfully in our center with a 100% success rate. The technique involves the placement of a torchlight (flashlight) or a cold light source (for example, the endoscopic light which uses a xenon light source delivered to the tip by fibreoptic bundles and commonly available in operating room settings) under the limb/palm to visualize the veins on the dorsum of hand. For better contrast the lights in the treatment room to be turned off. The veins can be identified as dark lines in the pinker subcutaneous tissue. With this technique, venous visualization is also possible even with hematoma formation, previously punctured veins and in dark-skinned babies. The advantages of this technique are that it (1) provides better visualization and assessment of depth and caliber of vein (2) a torch (flash) light is easily available in hospital wards (3) provides a method of venous cannulation that is easier to master by the novice and (3) gives a visual check on successful catheterization of the vein.

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Neuroblastoma presenting as stridor in a neonate

Sir,

Stridor in the newborn period is an unusual presentation of neuroblastoma. We report a two and a half month-old infant presenting with stridor due to extrinsic tracheal compression caused by a cervico-thoracic neuroblastoma.

This baby presented to us with complaints of noisy breathing and respiratory distress since day 15 of life and fever for two days. This child, term-born and the older of twin females, was apparently well till day 15 of life, when she was noticed to have noisy breathing. The child’s symptoms were intermittent and nonprogressive and improved on prone positioning. There was no history of choking, difficulty in feeding, cyanosis, fever, recurrent vomiting, facial plethora and altered sensorium.

The child had earlier received steroids and antimicrobials for 20 days without a favorable response. There was no history of maternal hyperparathyroidism or phenytoin, phenobarbitone or diuretic intake during pregnancy. On examination, the child was found to have tachycardia and tachypnea with subcostal and intercostal retractions. Peripheries were warm and arterial blood oxygen saturation (SaO2) on supplemental oxygen was 96%. There was a 2 x 2 cm, firm and nontender cervical mass on the right side. Respiratory examination revealed marked distress with prominent stridor and diffuse bilateral crepitations. No other systemic abnormality could be detected.

On day 3 of admission, the child’s respiratory distress worsened and she was intubated and ventilated.
A postadmission chest radiograph showed diffuse bilateral infiltrates and mediastinal widening. Contrast-enhanced computerized tomographic imaging of the neck and chest revealed a large mass extending from the neck to the abdomen in the posterior mediastinum and compressing the airway from three sides [Figures 1 and 2]. The child was also started on intravenous antimicrobials at the time of admission as she had pneumonia; blood culture at admission was positive for *Staphylococcus aureus*. Child’s serum calcium level and renal function was normal.

Ultrasound-guided fine needle aspiration cytology of the chest mass showed small round cells with scanty cytoplasm, suggestive of a primitive neuroectodermal tumor. Methylidobenzylguanidine (MIBG) scans 24 and 72 h after contrast injection showed increased tracer concentration in the posterior mediastinum and right supraclavicular node, which was compatible with a neuroblastoma. Urinary vanillylmandelic acid (VMA) levels were normal. We offered chemotherapy to our patient as she had stage 4 disease, but the parents were unwilling for the same.

Neuroblastoma belongs to a group of small round cell tumors of neuroectodermal origin and accounts for 8–10% of pediatric cancers.[3] Although neuroblastomas can occur anywhere along the sympathetic chain, two thirds of the tumors are found in the abdomen. Infants have a higher incidence of cervical and thoracic tumors.[4] Neuroblastoma can give rise to diverse clinical manifestations because of variation in location of the primary tumor, distant metastasis by both lymphatic and hematogenous routes and paraneoplastic syndromes.[3] Thoracic tumors, though well known to cause stridor and other compressive symptoms, are often picked up accidentally on chest radiography performed for other indications.[4]

MIBG is an analog of norepinephrine that concentrates within secretory granules of catecholamine-producing cells. More than 95% of neuroblastomas secrete homovanillic acid (HVA) or VMA and hence, MIBG specificity for the diagnosis of neuroblastoma approaches 100% while sensitivity is reported to be around 90-95%.[5]

Treatment of neuroblastoma involves surgery, chemotherapy and radiotherapy, hence good coordination between these specialists is required. Other novel therapies that have been tried include [I$^{131}$]-MIBG, [I$^{125}$]-MIBG[5] and monoclonal antibody-based therapies for metastatic neuroblastomas.[6]

The present case highlights the importance of considering cervico-thoracic neuroblastoma as a diagnostic possibility in newborns presenting with stridor.

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