A Rare Complication of Umbilical Catheterization: Gluteal Necrosis

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Abstract

Umbilical catheter placement is frequently used in the neonatal intensive care unit. Umbilical vein is a very useful venous route to the usage of drugs, intravenous fluids and to obtain blood samples. It is a lifesaver for an emergency state in neonates. This application has several complications such as sepsis, hepatic injury, extravasation, cardiac tamponade, air embolism. We present a gluteal necrosis case associated with umbilical catheter misplacement which is seen very rarely.

ABBREVIATIONS

NICU: Neonatal Intensive Care Unit; CPAP: Continuous Positive Airway Pressure; PPHN: Persistent Pulmonary Hypertension of Newborn; UVC: Umbilical Venous Catheterization

INTRODUCTION

Umbilical catheterization is often used in neonatal intensive care unit (NICU) to maintain vascular access and for parenteral nutrition. Umbilical venous catheterization is more often used than umbilical arterial catheterization. Umbilical venous catheterization has several complications. The complications include malposition, portal vein thrombosis, hepatic necrosis, arrhythmia, pericardial tamponade, hydrothorax and systemic complications like sepsis and thromboembolism [1,2]. We present an umbilical catheter complication as a gluteal necrosis case due to mistaken placement in the umbilical artery.

CASE PRESENTATION

A 38 weeks gestational age, 4200-gram infant was delivered via caesarean section due to fetal distress. Antenatal history was unremarkable. Apgar scores were 5 and 6 at the 1st minute and 5th minute respectively. The infant was admitted to NICU with T-piece rescuscitor. PPHN was confirmed by echo and the baby was intubated to maintain normal oxygen delivery. Surfactant instillation has been applied via an endotracheal tube. Umbilical venous catheterization has been done to provide good vascular access with 5 Fr double lumen umbilical venous catheters. At that time he had a poor general condition, hypotensive (45/28 mm Hg), hypoglycemic (28 mg/dl) and suspected convulsions. Dopamine, dobutamine, phenytoin and hypertonic glucose infusions were started because of the critical condition before confirming the umbilical catheter position by x-ray. Drug infusions have continued for 1 hour before the X-ray could be done. Purplish discoloration on the left gluteal region was noticed after the first hour of infusions via the umbilical catheter (Figure 1). It was seen that the catheter had been placed in the umbilical artery instead of the umbilical vein (Figure 2). Immediately, all infusions were stopped and the catheter was removed. The baby was weaned off from the mechanical ventilator after 5 days and was on nasal CPAP until 12th days. On day 7, brain MR and diffusion MR were done due to hypoxic postnatal state and were normal. On the 24th day of life, necrotic tissue on the gluteal region was operated by the plastic surgeon with debridement and skin fleb rotation (Figure 3). He was discharged from NICU at the 29th day of life.

DISCUSSION

Both umbilical venous catheterization and umbilical arterial catheterization are often used in preterm and critically ill term patients to maintain the vascular access. The normally formed umbilical cord will have one umbilical vein and two umbilical arteries. In rare cases, the right umbilical vein persists, and supernumerary umbilical veins may be present. In most cases, this is not accompanied by other major or minor malformations [3]. A single umbilical artery can be found in approximately 1 percent of fetuses and is associated with an increased risk of intrauterine growth restriction and cardiac and renal defects [4].

After an umbilical catheter has been placed, it is important to confirm the catheter tip location via radiography or ultrasound. In an ideal anteroposterior x-ray view it should show a nonrotated image with the infant symmetrically positioned with the spine in
the midline, UVC will usually be observed to the anatomic right of the spinal cord [5]. UVC tip position must be located at the thoracic 7-9 vertebra level just above the diaphragm.

In literature, several cases of buttock necrosis due to an umbilical catheter can be observed. Purohit et al., published a case report in which buttock necrosis with foot drop was associated with umbilical artery displacement, in 1978 [6]. This case was similar to us except the foot drop. Similar to this case, our case had PPHN and hypoxemic condition and had received many drug infusions via the umbilical arterial line. Gluteal necrosis may be associated with many factors, namely placement of the catheter in other branches of the internal iliac artery, hypoxemia and hypoperfusion and lastly infusion of drugs and hypertonic fluids via the arterial line causing endothelial damage and intraarterial thrombus formation. Veernoij et al., also published a similar case of erroneous insertion of umbilical catheter into the umbilical artery which caused left buttock and labium necrosis during neonatal resuscitation [7]. The author explained that hypoxia makes it difficult to distinguish umbilical artery and vein from each other as hypoxia may cause dilatation of umbilical arteries making it appear as the umbilical vein.

To conclude, umbilical catheters should not be used until catheter position is confirmed by x-ray or ultrasound. It should be always remembered that in hypoxic patients, umbilical arteries may be dilated and can be mistaken for the umbilical vein.

REFERENCES