Introduction

The UVC is a main vascular access during the neonatal period. Malpositioning and potential complications of the UVC insertion are well known to pediatric radiologists. We present MRI, US and CT and plain film findings of hepatic hematoma in 3 newborns with multiple complications related to UVC placement.

Discussion

Appropriate course of umbilical vein catheter is through the umbilical vein to the ductus venosus, coursing into the suprahepatic IVC to terminate at the IVC/RCA junction. The possible suboptimal and abnormal placements of the UVC are:

1- Termination of the UVC in the ductus venosus
2- Retrograde course to the inferior vena cava (IVC)
3- Course to the superior vena cava (SVC) and internal jugular vein.
4- Course through the foramen ovale or atrial sepal defect to the left atrium and/or pulmonary veins.
5- Course through the foramen ovale or atrial sepal defect to the left atrium and/or pulmonary veins.

Placement of UVC, considered relatively safe, may be associated with multiple complications. In cases of UVC malpositioning, a higher incidence of the complications occurs. Poor blood return and difficulty administrating fluids through the UVC are clinical warning sign of UVC malpositioning. True incidence of UVC complications is unknown, because of variability in reporting and monitoring.

Venous thrombosis is a common complication of UVC placement. Infection and fracture of the catheter may occur and fracture fragments may migrate to the heart or pulmonary arteries. Perforation of the right or left atrium, left atrial appendage and cardiac tamponade, cerebral infarction and perforation of an intrahepatic vascular wall and hepatic hematoma and or intrahepatic fluid collection are rare but life threatening complications.

Method

In any infant with UVC placement, careful clinical and imaging surveillance for malpositioning and possible complications are recommended. We present MRI, US and CT and plain film findings of hepatic hematoma in 3 newborns with multiple complications related to the UVC placement. Ultrasound and plain films were performed for all three of them, CT scan in one patient and MRI in one patient.

Reference:


Conclusion

The UVC is a main vascular access during the neonatal period. To provide optimal patient care, the interpreting radiologist should be familiar with both the normal and abnormal courses of a UVC and potential complications of malplacement. Although uncommon, significant complications of UVC placement necessitate urgent interventions. Perforation of the infrahepatic vascular wall and hepatic hematoma and intrahepatic fluid collection are rare but possible. It is incumbent upon the pediatric radiologist to recognize line malposition.