Scalp intravenous catheter infiltration leading to subdural and intraparenchymal fluid collection

The scalp is a common site for obtaining IV access, and in children with hydrocephalus or wide fontanelles and sutures, there is a high probability of penetrating the meninges and brain matter with the scalp IV needle” Alexandru-Abrams et al (2019).

Abstract:

INTRODUCTION: Preterm infants require intravenous (IV) access for administration of medications, IV fluids, and parenteral nutrition. The scalp is a common site for obtaining IV access, and in children with hydrocephalus or wide fontanelles and sutures, there is a high probability of penetrating the meninges and brain matter with the scalp IV needle. If this penetration occurs and remains unnoticed, the contents of the IV infusion can infiltrate into the brain and cause severe brain damage.

CASE PRESENTATION: A 3-day-old female neonate, born with myelomeningocele, was receiving total parenteral nutrition through a scalp-vein IV. She experienced a sudden increase in head circumference, a bulging fontanelle, and respiratory distress. Magnetic resonance images demonstrated subdural fluid collection, and the patient underwent emergency surgery. The dura, when opened, exuded milky-white fluid consistent in color with parenteral nutrition. Postoperative imaging showed a parenchymal abnormality caused by the intracranial and intraparenchymal infusion of parenteral nutrition. Four years later, the child had a shunt and had mild cognitive impairment.
DISCUSSION: In cases of accidental intracranial administration of parenteral nutrition, we recommend that aggressive therapy be pursued to minimize the risks of developing comorbidities such as meningitis and to allow for maximal functional recovery.

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