Pediatric intracranial aneurysm rupture is rare, and is traditionally managed by surgical clipping. To the best of our knowledge, endovascular embolization of aneurysms in neonates has not previously been reported in Taiwan. We report a 9-day-old boy with intracranial aneurysms who underwent endovascular embolization, representing the youngest reported case in Taiwan. The 9-day-old boy presented with non-specific symptoms of irritable crying, seizure and respiratory distress. Computed tomography disclosed intraventricular hemorrhage, subarachnoid hemorrhage and focal intracranial hemorrhage around the right cerebellum. Subsequent computed tomographic angiography showed two sequential fusiform aneurysms, measuring 3 mm, located in the right side posterior inferior cerebellar artery (PICA). The patient underwent endovascular embolization because of the high risk of aneurysm re-rupture and the impossibility of surgical clipping due to the fusiform nature of the aneurysms. A postembolization angiogram revealed complete obliteration of the right distal PICA and proximal aneurysm. The distal PICA aneurysm was revascularized from the collateral circulation, but demonstrated a slow and delayed filling pattern. The patient’s condition remained stable over the following week, and he was discharged without anticonvulsant therapy. No significant developmental delay was noted at follow-up at when he was 3 months old. This case emphasizes the need for clinical practitioners to consider a diagnosis of intracranial hemorrhage in neonates with seizure and increased intracranial pressure. Neonatal intracranial aneurysms can be treated safely by endovascular treatment.

We report a case of two ruptured aneurysms in the right posterior inferior cerebellar artery (PICA) in a 9-day-old infant. We also discuss the clinical presentation and probable cause of this disorder.

1. Case Report

A 9-day-old male infant presented to another hospital with a 2-day history of choking, irritable crying and poor activity. On the day of admission, the...
The patient developed respiratory distress and was referred to our medical center. The child was delivered at 38 weeks of gestation, and the perinatal period was unremarkable. Initial findings in the neonatal intensive care unit revealed symptoms of seizure, fever of up to 38.5°C, and respiratory distress. The patient’s seizure ceased after administration of an anticonvulsant, though he continued to suffer from poor activity, weak crying and drowsiness. Neurologic examination showed symmetric pupils that were reactive to light. There was no facial palsy. The presence of a tense anterior fontanelle was noted. Muscle tone and strength were both decreased. Fever subsided on the second day of admission. No signs of trauma were identified. Only mild productive cough was noted, and chest radiography indicated increased infiltration in the right upper lung. His platelet count, prothrombin time and activated partial thromboplastin time were all within normal ranges. No retinal hemorrhage was noted on eye fundus examination.

Lumbar puncture showed homogeneous bloody cerebrospinal fluid (CSF), but no growth was seen in CSF culture. Brain echo showed acute hydrocephalus. Emergency computed tomography (CT) of the brain showed subarachnoid hemorrhage, intraventricular hemorrhage, intracranial hemorrhage around the right hemisphere of the cerebellum (Figure 1) and hydrocephalus of bilateral lateral and third ventricles.

A presumptive diagnosis of vascular disease with bleeding episode was made. Child abuse was ruled out due to lack of evidence in the history and physical findings. The patient’s fever was thought to be possibly related to aspiration pneumonia, rather than meningitis, because of the negative CSF culture and clinical course. Brain magnetic resonance imaging was arranged, but a blood clot and vasospasm resulted in an obscure image. The patient underwent external ventricular drainage for decompression. Brain CT angiography (CTA) performed prior to planned permanent CSF shunt surgery disclosed two 3-mm continuous fusiform aneurysms of the right PICA (Figure 2). A 4-Fr sheath was inserted into the right side of the PICA under fluoroscopic guidance, through which a coil and N-butyl cyanoacrylate glue were injected for embolization. A postembolization angiogram revealed complete obliteration of the right distal part of the PICA and the proximal aneurysm. The distal aneurysm was revascularized from the collateral circulation, although a slow and delayed filling pattern was seen. No neurologic deficits were evident after embolization. Follow-up CTA performed 2 days after embolization revealed complete obliteration of the two sequential PICA aneurysms; there was no evidence of contrast filling.

The patient’s condition remained stable over the following week, and he was discharged without anticonvulsant therapy. There were no neurologic sequelae at 3-month follow-up, and no anticonvulsants were needed.

3. Discussion

The case was initially treated as meningitis because of its clinical presentation, which included seizures, lethargy, tense fontanelle and fever. The presence of homogeneous bloody CSF, however, suggested the possibility of intracranial hemorrhage, though the diagnosis of intracranial aneurysm was not confirmed until performance of CTA.

Loss of consciousness, apnea, or seizures are the most common initial signs of a bleeding cerebral
Neonatal intracranial aneurysm rupture

Clinical practitioners should be aware of this diagnosis and should arrange early intervention. Although the precise cause of these lesions is not known, they can be treated safely using endovascular techniques.

References


4. Conclusions

Intracranial aneurysms are rare in the newborn, and their clinical presentation is non-specific. We have presented a 9-day-old patient with a ruptured intracranial aneurysm who showed a favorable outcome as a result of advances in endovascular management of newborn aneurysms. Clinical practitioners should be aware of this diagnosis and should arrange early intervention. Although the precise cause of these lesions is not known, they can be treated safely using endovascular techniques.