SHORT REPORT

Neonatal Mycotic Internal Iliac Aneurysm due to Methicillin-resistant Staphylococcus aureus (MRSA) Septicaemia Successfully Treated by Coil Embolisation

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A 12-day-old term male neonate presented with septic arthritis, multiple skin and intrabdominal abscesses and a mycotic aneurysm of the right internal iliac artery. He was diagnosed as having methicillin resistant staphylococcus aureus (MRSA) sepsis and deemed unsuitable for surgical treatment of the aneurysm. Coil embolisation of the internal iliac artery was performed, followed by a successful recovery and with no evidence of residual or recurrent infection. The authors describe a method of treating internal iliac mycotic aneurysms in high-risk patients by endovascular means, which we believe has not been attempted in this precise scenario before.

Keywords: Mycotic aneurysm; MRSA; Neonate; Coil embolisation.

Case Report

A 12-day old male newborn presented at the Norfolk and Norwich University Hospital with septic arthritis, multiple cutaneous and intra-abdominal abscesses, and also a mycotic aneurysm of right internal iliac artery (RIIA). The patient was delivered at 35 weeks’ gestation by emergency lower segment caesarean section (LSCS) due to foetal distress. The mother was healthy and had had one molar and three normal previous pregnancies. She had no demonstrable focus of sepsis at the time of operation. Neonatal hypoglycaemia of unknown aetiology required umbilical artery catheter (UAC) insertion on day 2 to deliver 10% dextrose solution. The line was removed on day 5. Its tip was sent for culture and sensitivity (C&S) studies, which reported growth of methicillin resistant staphylococcus aureus (MRSA). Subsequent swabs taken from mother and baby were also positive for MRSA. Both were clinically well at the time of examination thus no further action was taken.

One week later, the baby presented with increasing tachypnea, irritability and pyrexia. Examination revealed multiple skin abscesses. MRSA sepsis was suspected and he was commenced on intravenous (IV) vancomycin and cefotaxime. Abscesses of the right ilio-psoas and gluteal muscles and wrist were drained. Blood cultures grew MRSA. Fusidic acid and gentamicin were added as per the results of C & S results.

His clinical condition did not improve despite ten days of rigorous IV antibiotic therapy. On examination, superficially dilated blood vessels were visible in both groins, with concomitant lymphadenopathy and pitting oedema of the local abdominal wall. CT scan confirmed a right internal iliac artery aneurysm (RIIAA), also revealing osteomyelitis of the right iliac wing, as well as multiple intra-abdominal abscesses involving the right ilio-psoas and gluteal muscles. Serial aortic CT and US scans showed the RIIAA had enlarged from 1.8 cm to a maximum orthogonal AP diameter of 2.8 cm in ten days, and was surrounded by abscesses and inflammatory tissue [Fig. 1]. The left
common iliac (LCIA) and right external iliac (REIA) arteries appeared to be normal. The RIIAA was felt to be at high risk of rupture and but due to the baby’s poor condition also felt to be inoperable.

On day 28 the patient was transferred to Great Ormond Street Hospital (a tertiary paediatric unit), where he underwent percutaneous angiographic coil insertion via a left femoral approach as a day procedure [Fig. 2a]. This was performed under combined general and local anaesthetic, using US-guided puncture of the left femoral artery with insertion of a 3.5-French sheath. Angiography was with 3-French catheters. 10 microcoils were inserted (Hilal embolisation microcoils, William Cook Europe, Bjaeverskov, Denmark). Completion angiography confirmed good coil position [Fig. 2b], with follow up CT confirming absence of flow within the RIIA a week later.

Six weeks later, he was afebrile and well on oral rifampicin and fusidic acid. The only complication was a right-sided foot drop, possibly due to either a bony spur arising from the right iliac wing impinging on the right sciatic nerve, as suggested from a follow-up CT scan, or as a complication of the embolisation itself. A repeat USS at 7 weeks showed the aneurysm was smaller in size and the peri-aneurysm abscess had resolved.

He was discharged home aged 8 weeks on oral rifampicin and fusidic acid for a further 6 weeks. The most recent follow up at 14 months revealed that the RIIA could not be visualised on USS and the patient thriving and well. Though the foot drop still persisted at that time, the presence of obvious movements and normal sweating of the right foot was taken to indicate otherwise intact structural integrity of the nerves. Following botulinus toxin treatment for marked pes equinus deformity, the child successfully underwent an Achilles tendon lengthening operation at the age of 2 years and 7 months. Currently, the patient can move the right foot and leg normally.

Discussion

Mycotic aneurysms involving great vessels are uncommon in newborns and have a high mortality rate if left untreated. Lobe et al. reported a series of five infants diagnosed with mycotic aneurysms following UAC insertion; four of these infants were treated medically but died of complications such as aortic thrombosis (n = 1), septicemia (n = 3). The remaining one underwent surgical repair and survived for six months, dying of pulmonary failure.1

Osler first described these in 1885.2 Most cases in recent years have been a consequence of umbilical
artery catheterisation, while historically endocarditis has been the predominant cause. The most common organisms are *staphylococcus* (30%), *streptococcus* (10%) followed by *salmonella* (10%). UACs are routinely used in neonatal intensive care units (NICUs) usually with few complications.

Umbilical artery catheterisation was described for the first time in 1962. It is mainly used for haemodynamic monitoring or as an infusion line. Although it is life saving, it is associated with a 10% complication rate including thromboembolism, perforation, infection, pseudo-aneurysm and mycotic aneurysm. Mycotic aneurysm is a well-reported complication following UAC insertion complicated by sepsicaemia, with 48 cases of aneurysms arising from various segments of thoracoabdominal aorta in neonates reported in the literature. Usually these happen at the site of the catheter tip but there are case reports describing mycotic aneurysms in almost all parts of the aorta, iliac and the even the popliteal arteries. Intimal damage, thrombus formation, occlusion of vasa vasorum and subsequent arterial wall necrosis within an infective environment are implicated in the aetio-pathogenesis of mycotic aneurysms.

Deployment of endovascular devices in patients with significant disease, thereby precluding them from a high-risk operation can be an effective strategy in this scenario. This differs from the common thinking that prosthetic materials should not be used in an infected field. Although stent implementation for mycotic aneurysms in adults has been reported, to our knowledge this is the first case of a mycotic aneurysm in a neonate treated by coil embolisation. A search within Proquest and Ovid Medline using the keywords “mycotic aneurysm”, “internal iliac” with the Boolean operator “and” did not yield any results.

**References**


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