Acinetobacter baumannii ventriculitis case reports

2020

A clinical case of difficult-to-treat healthcare-associated Acinetobacter baumannii ventriculitis. The Acinetobacter baumannii strain was sensitive to colistin and trimethoprim/sulfamethoxazole, intermediate to tigecycline, and resistant to other antibiotics. While colistin was the drug of choice in this case, the patient developed anaphylactoid reaction during the IV administration of the loading dose of colistin, which mandated us to discontinue colistin and complicated the treatment of the patient. The patient did not respond to a combination of IV antibiotics that included meropenem, trimethoprim/sulfamethoxazole, and tigecycline. However, when IVT tigecycline was added as a last-resort therapeutic option, the patient's ventriculitis dramatically improved, and the patient was discharged from thehospital. Physicians who treat patients with healthcare-associated A. baumannii ventriculitis might resort to IVT tigecycline when they run out of therapeutic options [1)]

2018

A 6-year-old Ethiopian boy who developed ventriculitis/shunt infection from the pandrug-resistant strain of A. baumannii, after decompression of a craniotomy for medulloblastoma. Following the surgical procedure, he had developed hydrocephalus and ventriculoperitoneal shunt infection/ventriculitis as he presented with persistent fever, elevated white blood cell count, reduced glucose level, and the cerebrospinal fluid culture revealed A. baumannii, which was not responding to most of commercially available antibiotics systemically. Our patient was successfully treated with intravenous ampicillin-sulbactam.

Conclusions: We presented our case of pandrug-resistant A. baumannii ventriculoperitoneal shunt infection and ventriculitis successfully treated with a systemic ampicillin-sulbactam. Provision of systemic ampicillin-sulbactam should not be undermined. Therefore, this case exemplifies that intravenous administration of ampicillin-sulbactam can be a good therapeutic option against A. baumannii ventriculoperitoneal shunt infection and ventriculitis [2)].

2016

Shrestha et al report a case of MDR Acinetobacter ventriculitis treated with intravenous and intraventricular colistin together with intravenous tigecycline. The patient developed nephrotoxicity and poor neurological outcome despite microbiological cure. Careful implementation of bundle of measures to minimize EVD-associated ventriculitis is valuable [3)].

2015

Full remission in a patient with catheter-associated ventriculitis due to Acinetobacter baumannii

treated with intrathecal and intravenous colistin besides coinfections with other multidrug-resistant bacteria [4].

2013

A case of meningitis due to extensively drug-resistant A baumannii in an Austrian patient who had undergone neurosurgery in northern Italy. The case illustrates the limits of therapeutic options in central nervous system infections caused by extensively drug-resistant pathogens [5].

2012

A Baby PR was delivered vaginally in a district hospital of central India at 32 weeks of gestation following the premature rupture of membranes for more than 72 hours and spontaneous onset of labor. His mother received two doses of betamethasone as well as antibiotics before delivery. He had an Apgar score of 6 at the 1st minute and 9 at the 5th minute and weighed 1.5 kilograms at birth. His initial neonatal course was relatively straightforward with administration of one dose of surfactant, ventilation for 12 hours and subsequent continuous positive airway pressure (CPAP) for one week, and IV amoxicillin and gentamicin for 48 hours, which were stopped as blood cultures were negative. The baby did not require total parenteral nutrition or umbilical catheterizations. His initial head scan on day 2 was normal. Beyond the first week of life, the baby was stable with full enteral feeding and no respiratory support.

The baby had a septic deterioration at the end of the second week with recurrent apneas requiring ventilation. Blood tests revealed an increase in C-reactive protein (CRP: 80 mg/L; normal: <5 mg/L) and white blood cell count (23,000/mm3; normal: 4000–11000/mm3). All of the sepsis screening was performed and treatment was commenced with IV cefotaxime and gentamicin for late-onset sepsis. Blood culture obtained on that day showed the growth of MDRAB. The organism was sensitive to ceftazidime, polymyxin B, trimethoprim, colistin, netilmicin, and amikacin, but was resistant to all other 3rd and 4th generation cephalosporins, other aminoglycosides, quinolones, carbapenems, modified and enhanced penicillins (also with sulbactam), aztreonam, and chloramphenicol. Lumbar CSF examination revealed severe pyogenic meningitis. There was elevated CSF protein level - 1014 mg/dl (normal: 65-150 mg/dl), low CSF glucose – 20 mg/dl (normal: 24-63 mg/dl), and high white blood cell count - 500 cells/mm3 with 100% polymorphs (normal: 0-29 lymphocytes/mm3).

However, CSF obtained was insufficient for culture. The patient was referred to our tertiary neonatal unit on the 18th day of life because of a further increase in CRP (220 mg/L) and the positive blood culture results.

Antibiotic treatment was changed to IV ceftazidime and amikacin as per the blood culture results. The patient showed a clinical improvement over the next 48 hours with successful extubation and decline in his CRP.

Unfortunately, there was further deterioration on the 22nd day of life with bulging anterior fontanel and increasing head circumference. Cranial ultrasonography was suggestive of hydrocephalus and ventriculitis. Ventricular CSF examination on that day showed elevated proteins - 863 mg/dl, low sugar - 13 mg/dl, and a high white cell count - 2,360/mm3 with 90% polymorphs. CSF culture showed the growth of PDRAB that was sensitive only to polymyxin B and netilmicin, but resistant to all other

antibiotics as listed above.

Further advice was sought at this point from the microbiology and neurosurgical teams. IV netilmicin (5 mg/kg 12 hourly for 6 weeks) and polymyxin B (20,000 units 12 hourly for 6 weeks) were started on day 26 of life. IVT polymyxin B (40,000 units per dose) was given by alternate day ventricular puncture for four weeks (14 doses) as the family did not consent to the insertion of a ventricular reservoir.

Ventricular CSF examination after four weeks of therapy showed improvement: protein – 124 mg/dl, sugar – 35 mg/dl, and cell counts – 48/ mm3 (mainly lymphocytes). CSF culture was negative. IV therapy was continued for another two weeks.

Computed tomography of the brain performed after the treatment showed massive communicating hydrocephalus but no evidence of ventriculitis. Ventriculoperitoneal shunting was performed four weeks after stopping treatment, and the baby was discharged at the chronologic age of 4.5 months.

On subsequent follow-up at the corrected (for prematurity) age of two years, his head was growing consistently along the 25th percentile on the World Health Organization (WHO) growth chart and weight and height were just below the 10th percentile. His automated brain evoked audiometry was normal. He had a Bayley's Motor Development Index (MDI) of 80 and a Pervasive Development Index (PDI) of 65.

Bayley Scales of Infant Development-II (1993) assess the attainment of key developmental milestones in children from 1 to 42 months in two main domains: MDI and PDI as above. It is a tester-observed score only and although parental reports can be recorded, they do not contribute to the final scores. Raw scores are adjusted for the chronological age and index scores are obtained. Despite a lack of standardization in premature babies, this test is widely accepted as a reliable measure of development [6)].

2011

A 38-year-old, 84-kg Caucasian woman with a recent history of craniotomy was admitted with nausea, fever, headache, photophobia, and drainage from her craniotomy incision. She underwent a repeat craniotomy on hospital day 4 with abscess debridement and repair of a Cerebrospinal fluid fistula. Cultures grew MDR A. baumannii, coagulase-negative Staphylococcus species, and methicillin-resistant Staphylococcus aureus. Based on the limited published pharmacokinetic and pharmacodynamic data for colistin, we determined a favorable outcome with i.v. colistin monotherapy was unlikely and decided to treat the patient with simultaneous i.v. and intraventricular colistin, as well as intraventricular tobramycin and i.v. rifampin. She was treated with a total of 36 days of intraventricular colistin, 40 days of intraventricular tobramycin, 51 days of i.v. colistin and rifampin, and 56 days i.v. vancomycin for infection that persisted despite multiple debridements. The patient had subsequent improvement in clinical manifestations and eradication of infection. She was subsequently discharged to an acute rehabilitation facility on hospital day 77 with posttreatment sequelae including mental impairment and renal failure requiring hemodialysis. Follow-up visits revealed significant improvement in her mental status, speech, and strength on the side not affected by the stroke.

Prolonged combination therapy with intraventricular colistin and tobramycin plus i.v. colistin, rifampin, and vancomycin led to the resolution of a persistent central nervous system infection caused by MDR A. baumannii [7)].

2010

A case of a 42-year-old male patient affected by low-grade ependymoma who developed AB-MDR post-neurosurgical ventriculitis. Initially, because of in vitro susceptibility, De Pascale et al used a combination of intravenous colistin and tigecycline. This treatment resulted in the improvement of the patient's initial condition. However, soon after, the infection relapsed; tigecycline was stopped and treatment with intrathecal colistin was initiated. Cure was achieved by continuing this treatment for approximately three weeks, without adverse effects [8].

2009

A 2-month-old girl with ventriculitis caused by MDRAB is reported. Despite therapy with intravenous (IV) colistin ventricular fluid, cultures remained positive for MDRAB. Institution of combination therapy with IV and intraventricular colistin resulted in a successful clinical and microbiological outcome. Intraventricular/intrathecal and IV colistin might be the best therapeutic option in the treatment of central nervous system infection caused by MDRAB. Further studies are required to evaluate pharmacokinetic and pharmacodynamic parameters of combined IV and intraventricular/intrathecal colistin administration, especially in children [9].

2008

A case of a 40-year old man was admitted to the intensive care unit due to subarachnoid haemorrhage. The patient developed a ventriculitis due to A.baumannii treated successfully with sulbactam IV and intrathecal amikacin [10].

1)
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