

Meningoencephalitis and intraventricular devices: when intravenous therapy is not enough

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Background. M. was a full-term boy, born via emergency C-section because of a not reassuring cardiotocographic trace.

Case presentation. At 12 hours of life, he presented seizures. A lumbar puncture was performed, and the cerebrospinal (CSF) fluid was positive for *Listeria monocytogenes*. Brain magnetic resonance imaging (MRI) showed dilation and thrombosis of the transverse sinuses, with evidence of tetra-ventricular hydrocephalus and ventriculitis.

At 11 days of life, due to the worsening dilation of ventricles, the child was transferred to our Neonatal Intensive Care Unit (NICU). Intravenous antibiotic therapy (ampicillin and gentamicin) was administered for 21 days, with the resolution of the infectious episode.

Due to progressive ventricular dilation, an intraventricular Rickham reservoir was inserted, to ensure CSF removal when necessary.

Subsequently, he suffered from *Klebsiella pneumoniae* sepsis with meningoencephalitis.

Even with prompt starting of antibiotic therapy with Meropenem and Amikacin, to which the bacterium was sensitive, and the replacement of Rickham reservoir, it was not possible to eradicate the CSF infection. Only after the objective of ceftazidime/avibactam therapy and the initiation of intravenous and intrathecal therapy with colistin, the patient recovered. The long-term outcomes of the infection were severe with a worsening cystic hydrocephalus, which made CSF removal very difficult, and a severe impairment of the sensory, motor, and visual pathways.

Conclusions. Due to the absence of randomized studies, intrathecal antibiotic therapy cannot be used as a routine treatment. However, it can promptly address the therapeutic failure of intravenous antibiotic therapy, especially in patients with intracerebral devices in which infectious eradication is particularly difficult.