

Pseudomonas aeruginosa ventriculitis

Use of Intrathecal colistin has increased in recent years and has become an alternative for the management of infections of the central nervous system caused by multidrug resistant (MDR) bacteria. Evidence of therapeutic success and safety profile is increasing, particularly in MDR *Acinetobacter baumannii* infections in adults. Conversely, evidence in children is limited. We present a case of an 11-year-old female with postsurgical meningitis caused by an extensively resistant *Pseudomonas aeruginosa* strain and treated with venous and intrathecal colistin. The evidence of its use in children with nosocomial meningitis by MDR Gram negative bacteria was reviewed by Abad-Restrepo et al., ¹⁾.

Outcome

Multivariate logistic regression was performed by Sam et al., and found that the use of steroid ($P = 0.014$), *Pseudomonas aeruginosa* infection ($P = 0.010$), multiple organism infection ($P = 0.017$), lower Glasgow Coma Scale ($P = 0.043$), and a longer duration the EVD was in place before the diagnosis of Ventriculostomy-related infection (VRI) ($P = 0.008$) were related with higher mortality ²⁾

Of the case series investigating surgical instrument reprocessing with patient outcomes, improperly cleaned and sterilized neurosurgical instruments and contaminated rinse water were linked to *Pseudomonas aeruginosa ventriculitis* and *Mycobacterium* port site infections, respectively.

Large gaps exist between instrument reprocessing practices in LMICs and recommended policies/procedures. Identified areas for improvement include instrument cleaning and decontamination, sterilization aspects of instrument reprocessing, and verification of sterilization. Education and training of staff responsible for reprocessing instruments and realistic, defined policies and procedures are critical, and lend themselves to improvement interventions ³⁾.

A man with ventriculitis caused by *P. aeruginosa* and carbapenem-resistant *K. pneumoniae* was successfully treated with i.v. ceftazidime-avibactam and intrathecal amikacin ⁴⁾.

5: Gilbert B, Morrison C. Evaluation of intraventricular colistin utilization: A case series. *J Crit Care*. 2017 Aug;40:161-163. doi: 10.1016/j.jcrc.2017.04.010. Epub 2017 Apr 7. PubMed PMID: 28410511.

6: Pai S, Bedford L, Ruramayi R, Aliyu SH, Sule J, Maslin D, Enoch DA. *Pseudomonas aeruginosa* meningitis/ventriculitis in a UK tertiary referral hospital. *QJM*. 2016 Feb;109(2):85-9. doi: 10.1093/qjmed/hcv094. Epub 2015 May 18. PubMed PMID: 25991873.

7: Karagoz G, Kadanali A, Dede B, Sahin OT, Comoglu S, Altug SB, Naderi S. Extensively drug-resistant *Pseudomonas aeruginosa* ventriculitis and meningitis treated with intrathecal colistin. *Int J Antimicrob Agents*. 2014 Jan;43(1):93-4. doi: 10.1016/j.ijantimicag.2013.09.007. Epub 2013 Oct 15. PubMed PMID: 24239406.

8: Wang JH, Lin PC, Chou CH, Ho CM, Lin KH, Tsai CT, Wang JH, Chi CY, Ho MW. Intraventricular

antimicrobial therapy in postneurosurgical Gram-negative bacillary meningitis or ventriculitis: a hospital-based retrospective study. *J Microbiol Immunol Infect.* 2014 Jun;47(3):204-10. doi: 10.1016/j.jmii.2012.08.028. Epub 2012 Nov 30. PubMed PMID: 23201321.

9: Escota G, Como J, Kessler H. The green cerebrospinal fluid. *Am J Med.* 2011 May;124(5):411-3. doi: 10.1016/j.amjmed.2011.01.002. PubMed PMID: 21531229.

10: Baiocchi M, Catena V, Zago S, Badolati L, Baccarin M. Intrathecal colistin for treatment of multidrug resistant (MDR) *Pseudomonas aeruginosa* after neurosurgical ventriculitis. *Infez Med.* 2010 Sep;18(3):182-6. PubMed PMID: 20956875.

11: Gelfand MS, Cleveland KO, Mazumder SA. Successful treatment with doripenem and tobramycin of ventriculitis due to imipenem- and meropenem-resistant *Pseudomonas aeruginosa*. *J Antimicrob Chemother.* 2009 Jun;63(6):1297-9. doi: 10.1093/jac/dkp134. Epub 2009 Apr 15. PubMed PMID: 19369268.

12: Veena Kumari HB, Nagarathna S, Chandramouli BA, Umamaheshwara Rao GS, Chandramuki A. Investigation of an outbreak of device-related postoperative ventriculitis: a lesson learnt. *Indian J Pathol Microbiol.* 2008 Apr-Jun;51(2):301-3. PubMed PMID: 18603718.

13: Yagmur R, Esen F. Intrathecal colistin for treatment of *Pseudomonas aeruginosa* ventriculitis: report of a case with successful outcome. *Crit Care.* 2006;10(6):428. PubMed PMID: 17214907; PubMed Central PMCID: PMC1794456.

14: Gump WC, Walsh JW. Intrathecal colistin for treatment of highly resistant *Pseudomonas* ventriculitis. Case report and review of the literature. *J Neurosurg.* 2005 May;102(5):915-7. Review. PubMed PMID: 15926720.

15: Masvosva P, Buckingham SC, Einhaus S, Phelps SJ. Intraventricular and Intravenous Tobramycin with Ceftazidime for Ventriculitis Secondary to *Pseudomonas aeruginosa*. *J Pediatr Pharmacol Ther.* 2003 Apr;8(2):138-43. doi: 10.5863/1551-6776-8.2.138. PubMed PMID: 23300401; PubMed Central PMCID: PMC3469154.

16: Trick WE, Kioski CM, Howard KM, Cage GD, Tokars JI, Yen BM, Jarvis WR. Outbreak of *Pseudomonas aeruginosa* ventriculitis among patients in a neurosurgical intensive care unit. *Infect Control Hosp Epidemiol.* 2000 Mar;21(3):204-8. PubMed PMID: 10738991.

17: Chang YC, Huang CC, Wang ST, Chio CC. Risk factor of complications requiring neurosurgical intervention in infants with bacterial meningitis. *Pediatr Neurol.* 1997 Sep;17(2):144-9. PubMed PMID: 9367295.

18: Rouveix E, Bure AM, Regnier B, Wolff M, Pangon B, Laisne MJ, Vachon F. Experience with imipenem/cilastatin in the intensive care unit. *J Antimicrob Chemother.* 1986 Dec;18 Suppl E:153-60. PubMed PMID: 3469188.

19: Shulman ST, Yogev R. Treatment of pediatric infections with amikacin as first-line aminoglycoside. *Am J Med.* 1985 Jul 15;79(1A):43-50. PubMed PMID: 4025367.

20: Mombelli G, Klastersky J, Coppens L, Daneau D, Nubourgh Y. Gram-negative bacillary meningitis in neurosurgical patients. *J Neurosurg.* 1983 Oct;59(4):634-41. PubMed PMID: 6886784.

21: Winston DJ, Kurtz TO, Young LS, Busuttill RW. Moxalactam for treatment of nosocomial infections.

Rev Infect Dis. 1982 Nov-Dec;4 Suppl:S650-S655. PubMed PMID: 6218578.

22: Winston DJ, Busuttill RW, Kurtz TO, Young LS. Moxalactam therapy for bacterial infections. Arch Intern Med. 1981 Nov;141(12):1607-12. PubMed PMID: 6458253.

23: Veyssier P, Dusehu E. [Cefsulodine concentrations in cerebral ventricles during parenteral treatment of ventriculitis due to *Pseudomonas aeruginosa* (author's transl)]. Nouv Presse Med. 1981 Oct 3;10(35):2881-2. French. PubMed PMID: 7290939.

24: Klastersky J, Mombelli G, Coppens L, Daneau D, Brihaye J. Post neurosurgery Gram-negative bacillary meningitis. J Infect. 1981 Mar;3(1 Suppl):45-51. PubMed PMID: 7185952.

25: Warner JF, Perkins RL, Cordero L. Metronidazole therapy of anaerobic bacteremia, meningitis, and brain abscess. Arch Intern Med. 1979 Feb;139(2):167-9. PubMed PMID: 434970.

26: Olsen L, Grotte G, Nordbring F. Successful treatment of pseudomonas aeruginosa-ventriculitis with intraventricular gentamicin in a child with hydrocephalus. Scand J Infect Dis. 1977;9(3):243-5. PubMed PMID: 410097.

1)

Abad-Restrepo J, Díaz-Díaz A, Osorio-Cadavid N. [Post-surgical ventriculitis due to extensively resistant *Pseudomonas aeruginosa* treated with intrathecal colistin. Pediatric case report and literature review]. Rev Chilena Infectol. 2018;35(3):321-325. doi: 10.4067/s0716-10182018000300321. Spanish. PubMed PMID: 30534914.

2)

Sam JE, Lim CL, Sharda P, Wahab NA. The Organisms and Factors Affecting Outcomes of External Ventricular Drainage Catheter-Related Ventriculitis: A Penang Experience. Asian J Neurosurg. 2018 Apr-Jun;13(2):250-257. doi: 10.4103/ajns.AJNS_150_16. PubMed PMID: 29682017; PubMed Central PMCID: PMC5898088.

3)

Forrester JA, Powell BL, Forrester JD, Fast C, Weiser TG. Surgical Instrument Reprocessing in Resource-Constrained Countries: A Scoping Review of Existing Methods, Policies, and Barriers. Surg Infect (Larchmt). 2018 Aug/Sep;19(6):593-602. doi: 10.1089/sur.2018.078. Review. PubMed PMID: 30156997.

4)

Gofman N, To K, Whitman M, Garcia-Morales E. Successful treatment of ventriculitis caused by *Pseudomonas aeruginosa* and carbapenem-resistant *Klebsiella pneumoniae* with i.v. ceftazidime-avibactam and intrathecal amikacin. Am J Health Syst Pharm. 2018 Jul 1;75(13):953-957. doi: 10.2146/ajhp170632. PubMed PMID: 29941534.

From:

<https://neurosurgerywiki.com/wiki/> - Neurosurgery Wiki

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=pseudomonas_aeruginosa_ventriculitis

Last update: **2024/06/07 02:57**

