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CASE REPORT article

Colistin use in the Neonatal Intensive Care Unit of Algala Maternity Hospital

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Colistin, a polymyxin antibiotic, is commercially available in two forms: colistin sulphate (oral or topical powder) and colistimethate sodium (CMS) (parenteral formulation) [1]. When used for neonatal multidrug resistance-gram-negative infections (e.g., carbapenem-resistant Acinetobacter, Klebsiella, and Pseudomonas), i.v. colistin is frequently effective (clinical response rate is 70.0%-90.0%) and is considered a last-resort option [2, 3]. However, pharmacokinetics in neonates differ from those in older children/adults. A number of pharmacokinetic studies suggest standard low doses may produce subtherapeutic plasma colistin concentrations. Some guidance recommends a loading dose strategy in neonates/infants [4-6]. The case studied is a 3.7 kg male post-emergency section term 38 weeks plus two days, 2025. An echo done and revealed a ventricular septal defect and a small left kidney medication start with ampicillin and cefotaxime as first-line prophylactic treatment in the Neonatal Intensive Care Unit (NICU), Algala Maternity Hospital, Tripoli, Libya. The subsequent medicines are described: Phenobarbitone for convulsion, and meropenem, amikacin as second line after C-reactive protein (CRP) was raised calcium gluconate 10.0% for hypocalcemia, furosemide and spironolactone for cardiac problem. Colistin was used in this stage because CRP raised again and there was no response to the third line of antibiotics [3, 7]. In the present case, the Clinical Pharmacists have the following issues regarding colistin use.

Dose and administration of colistin (i.v.): 16666 IU/kg every 8-hour infusion over 30 min, should consider hydration of the patient, and the rate of administration of colistin to minimize the risk of nephrotoxicity caused by colistin. It is a great challenge to give colistin *i.v.* without drug level, only use U/E and creatinine level to monitor the kidney function.

Preparation and dilution: Preparation requires careful reconstitution and dilution before infusion. Colistin that is used for patients is 1000000 IU. Dilution factor necessitates being diluted in 25.0 ml of the compatible i.v. fluid, which is normal saline.

The following equation was used: dose of the baby *25/10000, the result will be in a ml given over 30 min which is really interesting that other setting does the following: The first one, where the vial contains 150 mg CMS (equivalent to 150 mg colistin base activity), was prepared with sterile water for injection and then diluted further in compatible i.v. fluid (0.9% NaCl), and given by i.v. infusion over 30-60 min. Doses to be given are loading dose: 75,000-150,000 IU/kg (6.0-12.0 mg/kg CMS), and the maintenance dose: 50,000-75,000 IU/kg every 12

hours (4.0-6.0 mg/kg CMS q12 hrs.). It should be noted that dosing is individualized based on renal function and infection severity.

Other recommends: Loading dose is 75,000 IU/kg (6.0 mg/kg CMS) with a maintenance dose is 50,000 IU/kg q 12 hrs. (4.0 mg/kg CMS) and reconstitute CMS powder with sterile water, then diluted in i.v. fluid, administered by slow i.v. infusion, avoiding bolus.

Clinical note: Pharmacokinetic variability in neonates; therapeutic drug monitoring encouraged when available. Clinical response rate 70.0%-90.0% in neonatal multidrug resistance-gram negative infections.

Ethical approval: This study was conducted in accordance with the international ethical principles, and the approval was obtained from the Institutional Review Board (Tripoli Children's Teaching Hospital, Libya, SU-08-2025). Participant was a neonate; therefore, informed consent was obtained from the parent prior to enrollment, and he was informed about the purpose and procedures of the study, and written informed consent was obtained before enrollment. Participation was voluntary, and confidentiality and data anonymity were strictly maintained throughout the study.

References

1. Falagas ME, Kasiakou SK. Colistin: the revival of polymyxins for the management of multidrug-resistant gram-negative bacterial infections. Clinical Infectious Diseases. 2005; 40(9): 1333-1341. doi: 10.1086/429323. Erratum in: Clinical Infectious Diseases. 2006; 42(12): 1819. Dosage error in article text. PMID: 15825037.
2. Nakwan N, Chokephaibulkit K, Imberti R. The use of colistin for the treatment of multidrug-resistant gram-negative infections in neonates and infants: A review of the literature. The Pediatric Infectious Disease Journal. 2019; 38(11): 1107-1112. doi: 10.1097/INF.0000000000002448
3. Antachopoulos C, Iosifidis E. Colistin use in neonates and children with infections due to carbapenem-resistant bacteria. The Pediatric Infectious Disease Journal. 2017; 36(9): 905-907. doi: 10.1097/INF.0000000000001655
4. Neonatal Medication Guideline – Colistin (Western Australia Department of Health)
5. Hashad NS. Dosing in the neonatal intensive care unit. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2023; 3(3): 61-62. doi: 10.5281/zenodo.8393129
6. Alouzi NA, Hashad NS ,Yamane MA. Drug utilization pattern in the NICU: A World Health Organization-Anatomical Therapeutic Chemical Classification-based cross-sectional study. Mediterranean Journal of Pharmacy and Pharmaceutical Sciences. 2025; 5(3): 75-82. doi: 10.5281/zenodo.16970145
7. Chibabhai V, Bekker A, Black M, Demopoulos D, Dramowski A, du Plessis NM, et al. Appropriate use of colistin in neonates, infants and children: Interim guidance. Southern African Journal of Infectious Diseases. 2023; 38(1): 555. doi: 10.4102/sajid.v38i1.555

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