Meropenem Efficacy in the Neonatal Intensive Care Unit: A Case Series

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Background

- Meropenem is a broad spectrum carbapenem antibiotic
  - Used occasionally in the neonatal intensive care unit (NICU)
  - Treats infections such as meningitis, sepsis, and pneumonia
- There is controversy regarding whether an infusion duration of 4 hour vs 30 minutes is the most effective for neonates
- Meropenem is currently administered over 30 minutes in Fraser Health NICU

Objectives

- To determine the overall cure rate achieved with the current meropenem regimen in the NICU
- To determine time to microbiological cure and clinical cure when meropenem was required

Methods

- **Design:** Chart review
- **Inclusion:**
  - Received meropenem in the NICU
    - Dates: June 2012 to May 2017
    - Hospitals: Surrey Memorial or Royal Columbian
- **Exclusion:** 45 or more weeks post menstrual age
- **Analysis:** Descriptive statistics

Results

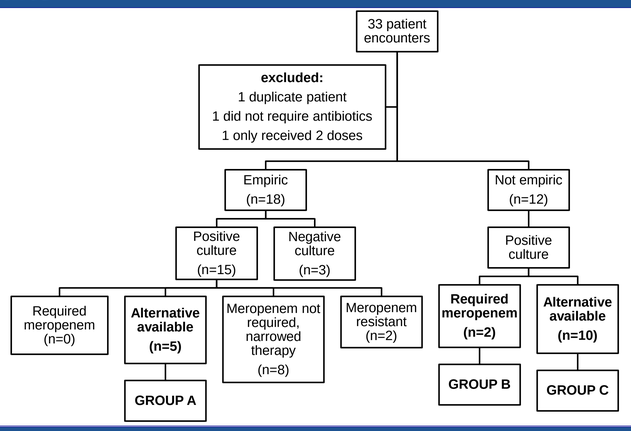


Figure 1: Patient inclusion flow diagram

Characteristics	Group A (n=5)	Group B (n=2)	Group C (n=10)
Day of life	20 (4 to 27)	17 (9 to 33)	22 (5 to 46)
Post menstrual age (weeks)	30 (22 to 32)	29 (29 to 30)	29 (25 to 34)
Weight (grams)	1056 (830 to 1325)	970 (910 to 1030)	1084 (565 to 2240)
Male	3	0	5
Central line	3	2	6
Intubated	5	2	8
Inotrope use	3	0	2
Platelet transfusion	1	0	4
Culture type			
ETT aspirate	4	1	7
Blood	1	2	4
Cerebral spinal fluid	0	2	0

Table 1: Patient characteristics

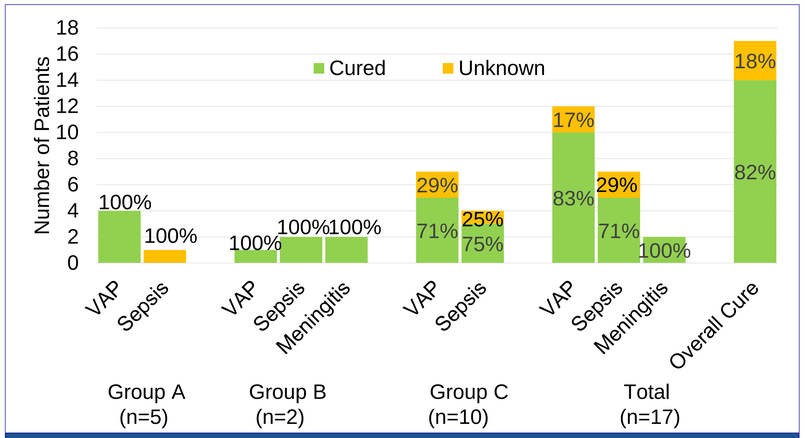
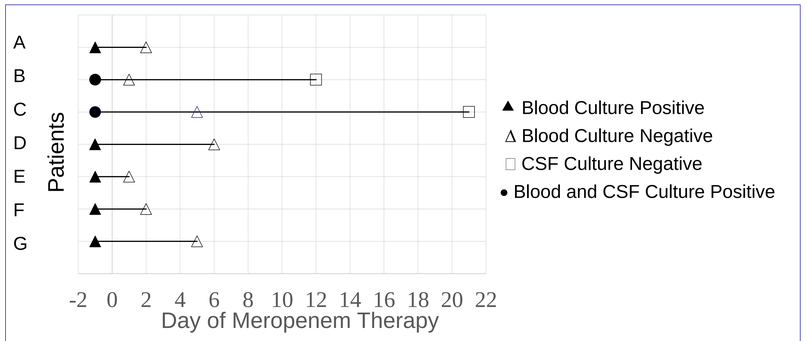


Figure 2: Cure with meropenem (n=17)



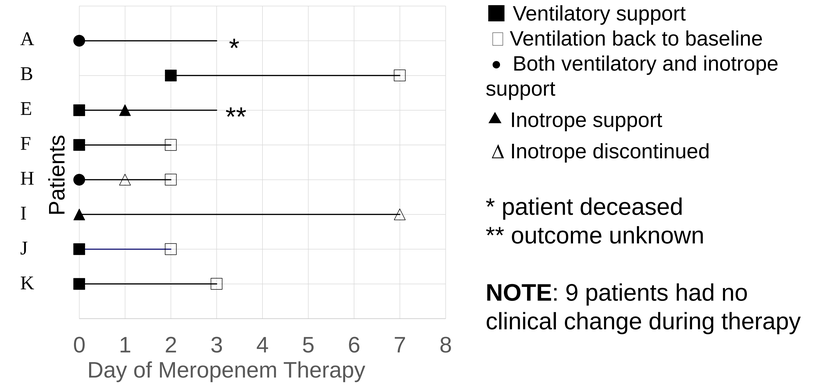
Day 0 = when meropenem started

Figure 3: Time to microbiological cure with meropenem (n=7)

	Number of positive cultures	Mean time to repeat culture	Number of negative cultures on follow up	Microbiological cure
Blood	7	4.1 days	7	100%
CSF	2	17.5 days	2	100%

Sputum cultures were excluded due to the possibility of persistent colonization

Table 2: Microbiological cure with meropenem (n=7)



Average time to clinical cure (n=6): 3.3 days

Figure 4: Time to clinical cure with meropenem (n=8)

Limitations

- Small number of patients had objective changes in clinical status
- Not all patients had a follow up culture for test of cure

Conclusions

- 82% of patients had their infection cured
- All repeat blood/CSF cultures were negative
- Average time to microbiological cure was 4.1 days for blood cultures
- Average time to clinical cure was 3.3 days
- Meropenem regimen was effective

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