

***PSEUDOMONAS AERUGINOSA* MENINGITIS IN  
NEUROSURGICAL PATIENTS WITH  
INTRAVENTRICULAR CATHETERS :  
COMPARISON BETWEEN AMINOGLYCOSIDES OR  
COLISTIN INTRATHECAL TREATMENT**

C. Rodríguez- Lucas, J. Fernandez-Suarez, J. Boga, F. Vazquez, M. Telenti,  
A. Rodríguez-Guardado

Hospital Universitario Central de Asturias (Oviedo- Spain).

# BACKGROUND

- Meningitis due to *Pseudomonas aeruginosa*, are uncommon and typically related to neurosurgical procedures or intraventricular catheter.
- An increased rate of infections caused by *Pseudomonas* strains resistant to the antibiotics traditionally used in this therapy has been reported restricted the treatment to intravenous drugs such as ceftazidime, carbapenems and aminoglycosides, often in combination with intrathecal agents such as aminoglycosides or colistin.

# OBJECTIVE

---

The aim of this study is comparing the outcome of a group of patients diagnosed of nosocomial neurosurgical meningitis by *Pseudomonas aeruginosa* treated with intrathecal colistin vs intrathecal aminoglycoside.

# METHODS

- ✓ All patients adults with nosocomial postsurgical meningitis due to *P. aeruginosa* diagnosed at the Hospital Universitario Central de Asturias (Oviedo, Spain), between 1990 and 2014 were retrospectively reviewed.
- ✓ Nosocomial meningitis was defined according to the CDC definitions.
- ✓ A positive CSF culture or Gram stain with normal levels of glucose, proteins and cell count in absence of clinic was considered as a contamination and discarded.

# METHODS

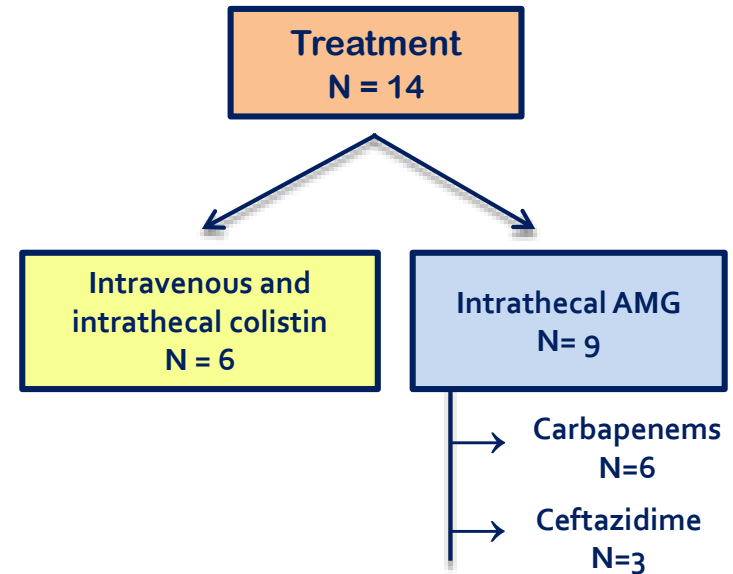
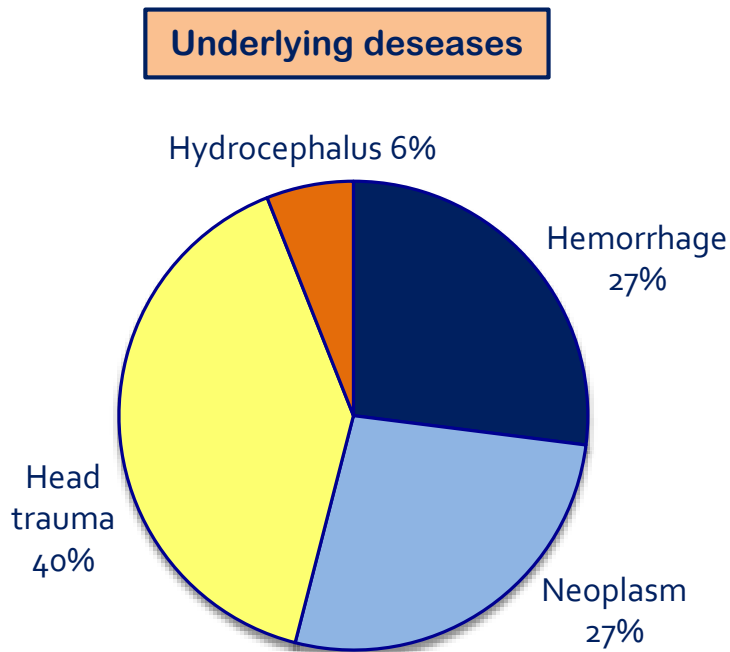
- ✓ The treatments included the following parenterally administered antibiotics:
  - Imipenem 1 g/8 h,
  - Meropenem 2 g/8 h,
  - Ceftazidime 3 g/8 h,
  - Colistin sulfomethate sodium 5 mg/kg/day administered in three doses.
- ✓ Intrathecal treatments were colistin (10 mg/12 h), gentamicin or tobramycin (both at 10 mg/24 h) or amikacin (20 mg/24 h).

# METHODS

- ✓ Cure was achieved when two successive cultures were negative and clinical signs of infection were absent.
- ✓ To assess survival, patients were followed up until they died in the hospital or were discharged.
- ✓ Quantitative variables were analyzed with the Student t test or the Mann-Whitney test when appropriate. Qualitative variables were analyzed with the chi square test with the Yates correction or Fischer's exact test (2-tailed) when needed. Significance was designated at  $p < 0.05$ .

# RESULTS

- ✓ *P. aeruginosa* was isolated from 14 CSF cultures (57% women, mean age of 48 [18] years).
- ✓ The mean time lapsed between the surgery and the onset of the infection was 18 [7] days.



# RESULTS

Characteristics	Colistin group (N = 6)	AMG Group (N = 9)	P value
<b>Demographic</b>			
Age	53[13]	45[19]	0.429
Sex(Male/Female)	2/4	4/5	0.608
<b>Stay before the surgery</b>	18[15]	22[5]	0.449
<b>Underlying diseases (Y/N)</b>			
Haemorrhagia	2/4	2/7	1
Brain Neoplasm	1/5	3/6	0.604
Head Trauma	2/4	4/5	1
Hydrocephalus	1/5	0	0.400
<b>Pure culture/mixed flora</b>	6/0	4/5	0.103
<b>Cure (Yes/No)</b>	6/0	7/2	0.486
<b>Catheter removal</b>	5/1	7/2	1

\*Univariable analysis



# CONCLUSIONS



1. Intrathecal therapy is a safe option in the treatment of nosocomial meningitis by *P. aeruginosa* associated a very low mortality.
2. The treatment with colistin is as safe and useful option as the treatment with aminoglycosides.