Pseudomonas aeruginosa meningitis in neurosurgical patients in a tertiary referee hospital

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BACKGROUND

- *Pseudomonas aeruginosa* meningitis is a rare condition which is usually associated with pathology in the ORL field, neurosurgery or local neurologic manipulations.

OBJETIVE

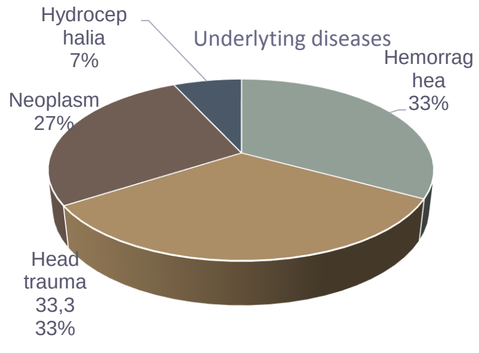
- The aim of this study is the description of the characteristics of the neurosurgical meningitis due to *Pseudomonas aeruginosa* emphasizing the factors influencing their outcome.

METHODS

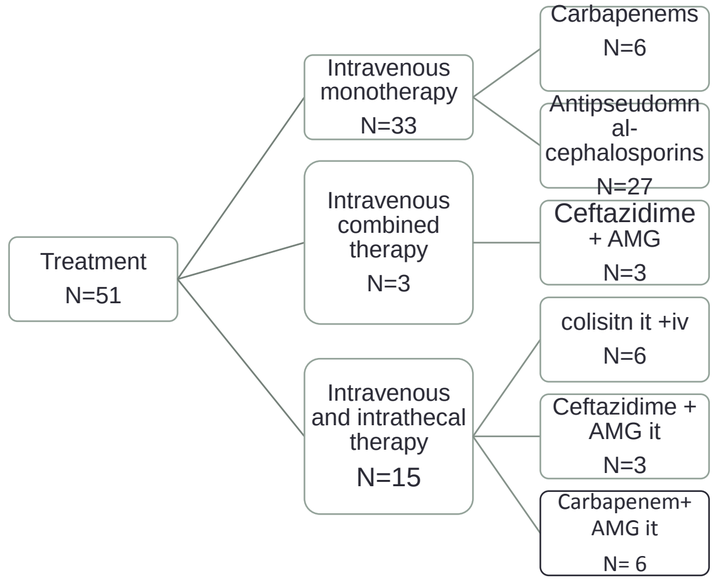
- ✓ All patients adults with nosocomial postsurgical meningitis due to Ps aeruginosa diagnosed between 1990-2014 were retrospectively reviewed.
- ✓ Nosocomial meningitis was defined according to the CDC A positive CSF culture or Gram stain with normal levels of glucose, proteins and cell count in absence of clinic was considered as a contamination and discarded
- ✓ The treatments included the following parenterally administered antibiotics: imipenem 1 gr/ 8 hours, meropenem 2 gr /8 hours, ceftazidime 3 gr/8 hours, amikacin 500 mg/8 hours, sodium colismethate 5 mg/kg/ day administered in three doses in patients with normal renal function . In some cases the treatment were administered intrathecally: colistin (10mg/12 hours), or gentamycin ,or tobramycin (both at 10 mg/24 hours respectively) or intrathecal amikacin (20 mg/24 hours).
- ✓ Cure was achieved when two successive cultures were negative and clinical signs of infection (fever, meningismus) were absent.
- ✓ To assess survival, patients were followed up until they died in the hospital or were discharged.

✓51 CSF cultures for Pseudomonas aeruginosa were found in 51 different patients (58,8%% men, mean age of 50 [18] years. The mean time elapsed between the surgery and the onset of the infection was 22[20] days (range 3-112). The mean of permanence of IVC before the diagnosis was 21 [19]. The characteristics of CSF were: white cell count 6,964 [33,569] cell/mm3, protein 321[314] g/dl and glucose 49[37] mg/dl. The most frequent underlying disease were: hemorrhage (33,3%), neoplasm (33,3%), head trauma (27,5%) and hydrocephaly (5,9%) . Seventy-six percent of patients had a intraventricular catheter, 17% a CSF leakage and 6% a peritoneal device. Polymicrobial meningitis was found in ten patients

			univariable analysis	
Characteristics	Nº cases	Dead (%)	**P value**	**Odds ratio**
Treatment				
Ceftazidime	27	12(44%)	0.068	3.040[0.877-10.544]
Carbapenems (Yes /no)	6	2 (33%)	0.688	
IV + IT Colistin	6	0(0%)	0.075	1.00[0.164-6.092]
AMG IT treatment	9	2(22%)	0.359	0.824 [0.705-0.962]
Combined IV therapy	3	1(33%)	0.745	0.514[0.096-2.797]
				1.00[0.084-11.784]
IT Treatment	**15**	**2(13,3%)**	**0.048**	**0.215[0.042-1.099]**



RESULTS



- There is not differences in sex, time of , mixed culture, in dead and survival patients. Mortality was higher in patients with neoplasm (70%) but without significantly differences (p=0.125) Mortality was significantly associated with older age (53[17], vs 49[18], p=0.001),, lack of removal of the intraventricular catheters p= 0.006, OR: 5.74 [1.51-12.29] and an inadequate empiric treatment (p= 0,010, OR 3,14 [3.33-15,6]) , The mortality was lower in patients treated with colistin intravenous and intrathecal (0 vs 17, p=0,075 OR= 1.61 [1.28-2.02]

CONCLUSIONES

- Nosocomial meningitis by *Pseudomonas aeruginosa* is an infection with high mortality associated with lack of removal of the intraventricular catheters, older age and absence of intrathecal therapy .
- The use of colistina intravenous and intrathecal combined with carbapenems or cephalosporins is a useful and safe option

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