

Ps. aeruginosa meningitis in neurosurgical patients with intraventricular catheters: assessment of different treatments

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Objective:

✓The aim of this study is to describe the clinical features and the outcome of a group of patients with nosocomial neurosurgical meningitis treated with different therapeutic options

Material and Methods

✓All patients adults with nosocomial postsurgical meningitis due to Ps. aeruginosa related with IVC intraventricular catheters diagnosed at the Hospital Central de Asturias Oviedo, between 1990-2014 were retrospectively.

✓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

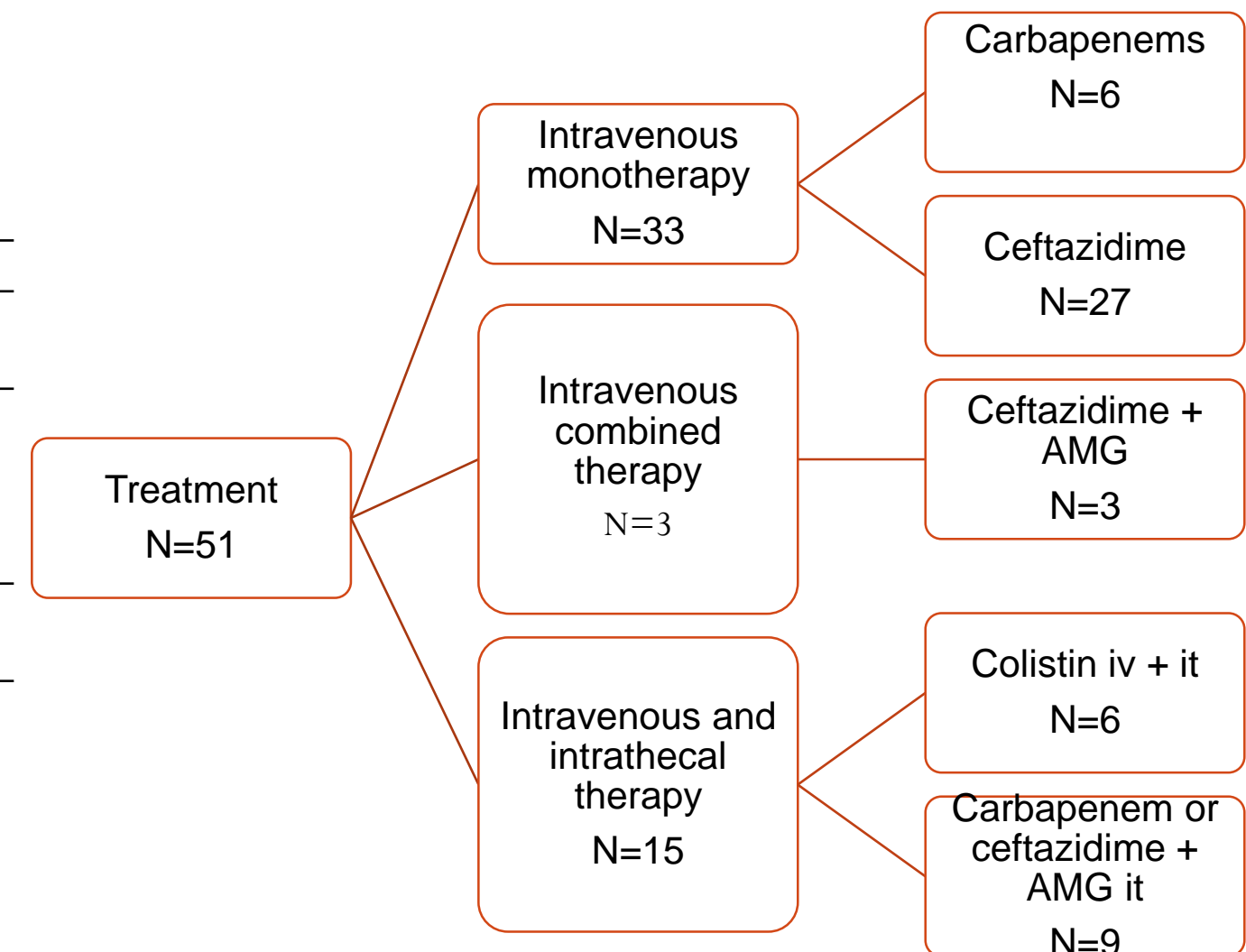
✓The treatments included the following parenterally administered antibiotics: imipenem 1 gr/ 8 hours, meropenem 2 gr /8 hours, ceftazidime 3 gr/8 hours, amikacin 500 mg/8 hours, sodium colismethate 5 mg/kg/ day administered in three doses in patients with normal renal function . In some cases the treatment 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)14.

✓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.

POPULATION

51 patients, 58.8% men, mean age of 50 [18] years.
Mean time between the surgery and the infection was 22[20] days (range 3-112).
Mean of permanence of IVC before the diagnosis was 22 [14].

Characteristics	Dead (n=17)	Cure (n=34)	univariable analysis	
			P value	Odds ratio
Demographic				
Age	53[17]	49[18]	0.980	
Sex(Male/Female)	12/5	16/18	0.366	0.469 [0.135-1.623]
Stay before the surgery	21[16]	21[21]	0.634	
Underlying diseases (Y/N)				
Haemorrhagia	12/22	5/12	0.760	0.764[0.217-2.688]
Brain Neoplasm	8/9	9/25	0.208	2.469[0.729-8.360]
Head Trauma	3/14	11/23	0.334	0.448[0.106-1.889]
Hydrocephalus	1/16	2/32	1.000	1.000[0.084-11.874]
Pure culture/mixed flora	12/5	29/5	0.270	2.417[0.590-9.902]
Adequate empiric treatment	10/7	31/3	0.010	7.230[1.31-44.77]
CSF characteristics				
leukocytes	5139[10149]	1331[2085]	0.0001	
glucose	29.84[17.6]	32.54[19.9]	0.669	
Proteins	320[161]	285[167]	0.878	
Treatment (Yes/No)				
Carbapenems (Yes /no)	2/15	4/30	1.000	1.000[0.164-6.092]
IV + IT Colistin	0/17	6/28	0.067	Not defined
Ceftazidime	12/5	15/19	0.068	3.040 [0.877-10.544]
Combined IV therapy	1/16	2/34	1.000	1.000 [0.084-11.874]
IT Treatment	2/15	13/21	0.050	4.64[0.80-34.93]
AMG IT treatment	2/15	7/27	0.699	0.514[0.095-2.797]
Catheter removal	5/12	24/10	0.005	5.76[1.38-25.62]



There were no statistically significant differences in age, sex, underlying diseases, mixed culture and catheter removal between the different treatments. Treatment was associated with removal of the intraventricular catheter in 29 cases. The 17 (33.3%) patients, who died as a direct consequence of the infection, were included in group A (12, 44.4%), group B (2, 33.3%), group C (1, 33.3%) and group D (2, 22.2%). Multivariable analysis confirm that the mortality was higher in group A (p=0.075), and lower in intrathecally treated patients (p= 0.50), specially in group E (p= 0.065) but without significative differences.

Conclusions

Nosocomial meningitis by P. aeruginosa is an infection with high mortality in absence of intrathecal therapy. The use of intravenous and intrathecal administered colistin is a safe option.