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Assessment of the management of bacterial meningitis in the adult Emergency Room

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Introduction

- ✓ In 2008, French guidelines on the management of bacterial meningitis were published [1].
- ✓ We aim to assess the management of bacterial meningitis in the adult Emergency Room of the University Hospital of Poitiers in order to identify and to correct factors associated with inappropriate practices.

Materials and Methods

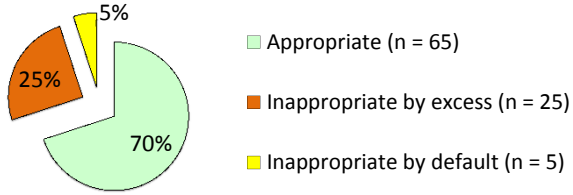
- ✓ Observational monocentric retrospective study by reviewing patient charts aged over 15 years and 3 months, with suspected bacterial meningitis at the emergency room, confirmed or not, from January 2010 to December 2011.
- ✓ Variables with potential influence on delay for management of patients were analyzed with simple linear regression.
- ✓ Time duration is expressed as a median (min-max).

Results

- 95 patients were included and their management was compared to current french guidelines [1].

Cerebral CT scan before lumbar puncture

- 45 cerebral CT scan were done.



Delays

- Median delay of lumbar puncture: 5h51 (1h09-26h20)
- Median delay before antibiotherapy: 6h31 (1h04-17h48)

Results

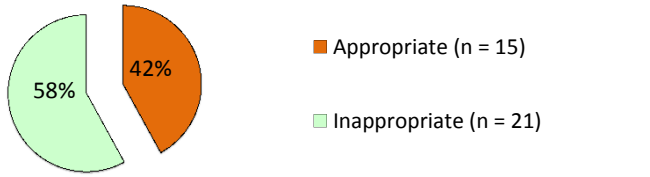
Factors associated with delays for performing lumbar puncture and first administration for antibiotics

	Delay of lumbar puncture in minutes Median (min – max) n = 92	Delay of antibiotics in minutes Median (min – max) n = 36
Suspected meningitis at admission*		
- yes	298 (69 – 775)	250 (64 – 894)
- no	384 (115 – 1580)	418 (82 – 1068)
	p = 0,019	p = 0,232
Time of the week		
- weekend and night	358 (90 – 1500)	428 (111 – 990)
- week day	337 (69 – 1580)	301 (64 – 1068)
	p = 0,563	p = 0,547
Nuchal rigidity		
- yes	280 (69 – 942)	298 (64 – 948)
- no	395 (115 – 953)	476 (127 – 1068)
	p = 0,007	p = 0,158
Fever (T > 38°C)		
- yes	329 (69 – 1580)	391 (64 – 1068)
- no	436 (90 – 775)	470 (111 – 828)
	p = 0,069	p = 1
Alteration of consciousness (Glasgow coma scale ≤ 14)		
- yes	316 (81 – 1580)	253 (72 – 708)
- no	362 (69 – 1500)	516 (64 – 1068)
	p = 0,400	p = 0,135
Cerebral CT scan before lumbar puncture		
- yes	412 (115 -1580)	363 (82 – 1068)
- no	317 (69 – 942)	421 (64 – 948)
	p = 0,003	p = 0,661
Discordance between emergency diagnosis and definite diagnosis*** **		
- yes	404 (81 - 953)	490 (72 – 1068)
- no	338 (69 – 1580)	292 (64 – 948)
	p = 0,443	***p = 0,03***

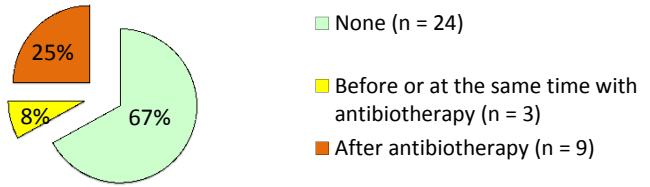
*Suspected meningitis mentionned on admission by the nurse or mentionned on a letter of admission by another doctor.
** Diagnosis suspected at the emergency room
*** Diagnosis at the hospital discharge

- Procalcitonin was rarely used (10,5%) and Hoen's rule never used.
- The blood glucose was done at the same time of lumbar puncture in only 5,4%.
- 36 patients received an antibiotherapy for meningitis and were indicated for concomitant corticotherapy.

Appropriate choice of antibiotics and dosing



Administration of corticotherapy



Conclusion

- ✓ Similary to our results, another recent study showed that a meningitis diagnosis as a motive of admission was significantly associated with earlier lumbar puncture and a trend toward a shorter delay in administration of antibiotherapy [2].
- ✓ Efforts should be aimed on improving early diagnosis in order to improve the management of bacterial meningitis in emergency room.
- ✓ Diagnosis tools such as procalcitonin or Hoen's rule should be popularized.

References

1. 17e conférence de consensus en thérapeutique anti-infectieuse : Prise en charge des méningites bactériennes aiguës communautaires (à l'exclusion du nouveau-né). Texte long. http://www.infectiologie.com/
2. Delangle C et al. Méningites bactériennes : facteurs associés au délai d'instauration d'une antibiothérapie adaptée aux urgences. Médecine Mal Infect. juin 2013;43(6):244-247.

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