

P0848 - Syndromic approach for meningo-encephalitis care: evaluation of PCR Multiplex Filmarray® ME panel, BioMérieux in a general hospital



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Background

Syndromic approach with multiplex PCR is emerging as a new standard of care strategy

We conducted a medico-economic study of the implementation of the FilmArray® ME panel, BioMérieux (FA-ME) in a general hospital, South East France

14 CIBLES
1h

- Rapide (1h environ)
- Fiable
- Détection simultanée

Bactéries	Virus	Levures
Escherichia coli K1 Haemophilus influenzae Listeria monocytogenes Neisseria meningitidis Streptococcus agalactiae Streptococcus pneumoniae	Cytomégalo virus (CMV) Entérovirus type 1 (E1V-1) Virus Herpes simplex de type 2 (HSV-2) Herpès virus humain 6 (HHV-6) Parécho virus humain (PZV) Virus varicelle-zona (VZV)	Cryptococcus neoformans/gattii

Methods

Cases (june to august 2017): patients with lumbar puncture ≥ 10 cells/mm³ (LP $\geq 10c$).
Non-interventional study : requests processed as usual + systematic FA-ME
Controls (june to august 2016): similar inclusion criteria, requests processed as usual but no FA-ME availability.

Table 1 : Comparative health-economics evaluation of meningitis cases 2016/2017

LP $\geq 10c$ /Total LP	2016 (N = 15/53)	2017 (N = 7/36)
Cases with confirmed infectious etiology	15 (100%)	6 (86%)*
Cases with identified pathogen	9 (60%)	6 (100%)
Bacteria	3 (<i>N. meningitidis</i> B, <i>S. aureus</i> , <i>S. pneumoniae</i>)	1 (<i>S. agalactiae</i>)
Virus	6 (Enterovirus, VIH)	5 (Enterovirus)
Parasite	-	-
N diagnosis with conventional techniques	3 (bacteria)	1 (bacteria)
N diagnosis with multiple singleplex PCR techniques m = 2 (1 to 9) screened pathogens/sample	6 (virus)	5 (virus)
N diagnosis with multiplex FilmArray® PCR	-	6
Median technical lab cost**	158.8 €	241.9 €
Median technical lab cost of conventional techniques	8.8 € (1.15 – 41.15)	6.9 € (1.15 – 41.15)
Median technical lab cost of simplex PCR techniques	150 € (0-800)	55 € (0-160)
Median technical lab cost of multiplex FilmArray® PCR	-	180 €
Median delay for final diagnosis/etiological exclusion	133 h (28-1440)	26 h (1-144)
Median delay for positive diagnosis with complete identification	110 h (n=9)	1 h (n=6)
Median delay for quantitative cytology	50 min	50 min
Median delay for qualitative cytology	2 h	2 h
Median delay for Gram stain	2 h	2 h
Median delay for solubles antigens	40 min	40 min
Median delay for conventional bacterial identification	45 h (28-60)	48 h
Median delay for singleplex PCR results	144 h (120-1440)	144 h (96-168)
Median delay for multiplex FilmArray® PCR results	-	1 h
Medium delay for AST	64 h (48 -84)	48 h
Median LCR volume used	2100µL (1000- 5000)	1700µL (1000-2000)
Median hospital stay	6.4 days	2.8* days
Therapeutic abstinence or desescalation within 48 h	7/15 (47%)	5/7 (71%)

* Exclusion of one patient, hospitalized for more than 2 months for a non infectious disease

** Exclusion of employees cost

Results (Table 1)

2017:
Etiology confirmed: 100% vs 60% in 2016
Positive diagnosis : 1h vs 110 h in 2016
Reagent cost: 241.9€ vs 158.8€ in 2016
Therapeutic limitation: 71% vs 47% in 2016
Hospital stay: 2.8 days vs 6.4 days in 2016



Conclusion

FA-ME allows rapid and broad screening of the pathogens potentially responsible for ME
Cost of FA-ME was offset by early discharge.
Our preliminary results could be further improved with growing experience of clinicians in the syndromic approach.