





学院要闻 学院快讯 教学信息 医院动态 科研动态 媒体聚焦 菁菁校园 电子刊物 图片新闻

上海交通大学医学院新闻网！

我要投稿 输入关键字



网站首页 > 学院快讯 > 正文

## 附属儿中心感染研究团队发表最新研究成果

15 浏览 (178)

来源：附属上海儿童医学中心

撰稿：

摄影：

Page 1 of 9

**Original Article**

### Evaluation of the BioFire FilmArray meningitis/encephalitis panel for the detection of bacteria and yeast in Chinese children

**Bailu Du<sup>1</sup>, Chunzhen Hua<sup>2\*</sup>, Yijun Xia<sup>1</sup>, Jin Li<sup>1</sup>, Yongping Xie<sup>3</sup>, Yue Tao<sup>4</sup>, Qing Cao<sup>1</sup>, Xi Mo<sup>5</sup>**

<sup>1</sup>Department of Infectious Diseases, Shanghai Children's Medical Center, Shanghai Jiao Tong University School of Medicine, Shanghai 200127, China; <sup>2</sup>Department of Infectious Diseases, The Children's Hospital of Zhejiang University School of Medicine, Hangzhou 310006, China; <sup>3</sup>Department of Medical Affairs, bioMérieux (Shanghai) Company Limited, Shanghai 201315, China; <sup>4</sup>The Laboratory of Pediatric Infectious Diseases, Pediatric Translational Medicine Institute, Shanghai Children's Medical Center, Shanghai Jiao Tong University School of Medicine, Shanghai 200127, China

**Contributions:** (I) Conception and design: Y. Tao, Q. Cao, X. Mo; (II) Administrative support: Q. Cao, X. Mo; (III) Provision of study materials or patients: C. Hua, Q. Cao; (IV) Collection and assembly of data: B. Du, J. Li, Y. Xie; (V) Data analysis and interpretation: B. Du, C. Hua, Y. Xia; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

\*These authors contributed equally to this work.

**Correspondence to:** Dr. Xi Mo, Dr. Qing Cao, Dr. Yue Tao, 1678 Dongfang Road, Shanghai Children's Medical Center, Shanghai 200127, China. Email: xi.mo@shsmu.edu.cn; caoqing@scmc.com.cn; taoyue@scmc.com.cn.

**Background:** Meningitis and encephalitis are life-threatening syndromes with high morbidity and mortality in children. Due to limitations of traditional laboratory approaches in etiological diagnosis, the rate of misdiagnoses is unacceptably high.

**Methods:** We retrospectively compared the potential clinical impact of the FilmArray meningitis/encephalitis (ME) panel vs. conventional cerebrospinal fluid (CSF) culture in children with central nervous system (CNS) infections. Sixty-eight pediatric patients (<18 years of age) with an initial diagnosis of meningitis or encephalitis were enrolled at 2 children's hospitals from January to October 2017.

**Results:** Fifteen specimens were found to be positive after CSF culture, with a positive rate of 22.1% (15/68). For the FilmArray ME panel, 26 bacteria and fungi from 25 samples were detected, and the positive rate was 36.8% (25/68). The FilmArray ME panel identified 14 pathogens in previously pathogen-negative patients.

**Conclusions:** This study demonstrated the capability of the FilmArray ME panel in the diagnosis of bacterial and fungal meningitis and therefore its potential use in facilitating enhanced patient care.

**Keywords:** Meningitis; encephalitis; rapid diagnosis; molecular diagnostic tests; FilmArray ME panel

Submitted Apr 19, 2019. Accepted for publication Aug 20, 2019.  
doi: 10.21037/atm.2019.08.103  
View this article at: <http://dx.doi.org/10.21037/atm.2019.08.103>

**Introduction**

Meningitis and encephalitis are life-threatening syndromes in children that can be caused by bacteria, yeasts or viruses. The morbidity and mortality of these infections can be high, particularly with bacterial-fungal meningitis. In China, the incidence of acute bacterial meningitis ranges from 6.95 to 22.3 cases/10,000 children <5 years of age (1,2). It has been reported that *Neisseria meningitidis* (*N. meningitidis*), *Haemophilus influenzae* (*H. influenzae*) type b and *Streptococcus pneumoniae* (*S. pneumoniae*) are among the most prevalent pathogens in children (3,4). Prompt diagnosis and appropriate antibiotic utilization are necessary to minimize adverse outcomes.

Despite being time-consuming and having low sensitivity (particularly in patients pretreated with antibiotics), routine culture remains the gold standard for the diagnosis of bacterial and fungal meningitis (5). However, the limitations of traditional laboratory approaches lead to unnecessarily prolonged empirical antibiotic treatment and an increase in the number of hospital admissions as well as the duration of

© Annals of Translational Medicine. All rights reserved. *Ann Transl Med* 2019;7(18):437 | <http://dx.doi.org/10.21037/atm.2019.08.103>

### 学院快讯

- 2019上海-巴黎双城医院管理国际论坛
- 附属瑞金医院院与罗氏（中国）投资有
- 第八届新华血液高峰论坛顺利召开
- 上海交通大学医学院管理干部海外专项
- 中德口腔培训中心（口腔颌面外科分中

### 科研动态

- 附属九院参加“中国卫生信息与健康医
- 哈佛大学医学院移植外科专家在附属仁
- 陆军军医大学第二附属医院（重庆新桥
- 第八届新华血液高峰论坛顺利召开
- 分子医学研究院左小磊课题组在框架粘

### 菁菁校园

- 本科生第一党支部开展主题党日活动
- “午间seminar”师生座谈解剖学学习方法
- 医学院“医辩天下”本科生辩论赛圆满落幕
- 2017级临八二班举办“双十医·交流分享
- 我院研究生代表参加首届“浙大-交大-复

### 媒体聚焦

- 【文汇报】粉墙黛瓦“寻美之旅”致敬建
- 【中新网上海】厨房有哪些营养误区？
- 【周到】吃黄瓜要不要削皮？煲汤多长
- 【文汇报】虾头变黑不能再吃了，熬汤
- 【青年报】向前走，博青春 | 虽隔万里

访问量：

1-63846590

附属上海儿童医学中心（上海）、上海交通大学医学院附属上海儿童医学中心儿科转化医学感染研究室莫茜教授、曹清教授领衔的感染研究团队近日在国际杂志Annals of Translational Medicine《转化医学年鉴》上发表了最新研究成果，于国内首度研究证明

FilmArray ME Panel可以显著提高细菌、病毒和真菌性脑膜炎的检出效率，对临床作出正确决策并快速开展精准抗感染治疗具有重大意义。

脑膜炎和脑炎是潜在的传染感染病突发事件，儿童脑膜炎和脑炎发病率和死亡率更是居高不下。脑膜炎或脑炎疑似病例的实验室诊断非常复杂，原因是需要鉴别诊断的疾病很多，且临床的症状和体征特异性不强。临床医生通常优先考虑宿主因素、症状持续时间、潜在危险因素以及实验室检查结果，例如使用脑脊液实验室检查结果结合多个微生物学检查来确定“是否感染”以及“感染的是什么病原体”。脑脊液革兰染色和脑脊液常规细菌培养一直是细菌性脑膜炎的诊断“金标准”，临床上已经使用了近一个世纪。然而，这两种方法的灵敏度都不是很高，因此，使用标准化的分子生物学方法来检测中枢神经系统感染病变得尤为重要。

与传统培养相比，分子检测速度更快，而且采集标本不受抗生素使用与否的影响。对于病毒和真菌性中枢神经系统感染而言，分子检测已经成为临床常用手段。FilmArray ME panel是一款基于多重PCR的CSF病原体检测体系，可对200 $\mu$ L CSF标本同时就CNS感染常见的6种细菌、病毒以及隐球菌进行排查，并在60分钟内给出检测结果。

本研究的研究对象为2017年1月至10月期间的68名来自上海儿童医学中心以及浙江省儿童医院初诊为脑膜炎或脑炎的患儿，回顾性地比较了FilmArray ME panel与传统脑脊液培养用于中枢神经系统感染病原体的诊断效率。研究结果显示，脑脊液培养的阳性率为25%（15/68），而FilmArray ME panel从25个样品中鉴定出了26种细菌和真菌，阳性率为92%（25/68）。FilmArray ME panel在脑脊液培养病原体阴性患者中新鉴定出14种病原体。研究结果同时显示，FilmArray ME panel受到抗生素的影响比传统的培养方法大幅减少。与此同时，FilmArray ME panel也展现了其在病毒检测中的突出能力——在68份样本中共检测出病毒17株，这也说明在临床工作中如果不检测病毒，造成的漏检有导致误诊或不合理抗感染的风险。

病毒检测一直是国内微生物检测的短板，随着分子生物学的发展，此类短板将逐渐弥补。论文通讯作者曹清教授介绍，虽然FilmArray ME Panel并不能取代脑脊液常规的微生物学检测方法，但是可以作为诊断脑膜炎/脑炎的重要补充实验，同时补充病毒学检验方面的空白。规范方法和分子生物学方法相结合，将能更好地服务于临床工作。

该项研究得到了浙江大学医学院附属儿童医院的样本支持，两位第一作者分别为上海儿童医学中心转化医学研究所杜白露博士、浙江大学医学院附属儿童医院感染科华春珍教授。通讯作者分别为上海儿童医学中心感染研究室莫茜教授、研究员陶悦博士以及感染科主任曹清教授。