

Evaluation of Meningitis/Encephalitis (ME) Panel in the Detection of Infectious Organisms in CSF of Children

Alyssa Scott
Muhlenberg College

Tibisay Villalobos MD
Lehigh Valley Health Network, tibisayvillalobos@lvhn.org

Follow this and additional works at: <http://scholarlyworks.lvhn.org/research-scholars-posters>

Published In/Presented At

Scott, A., Villalobos-Fry, T., (2017, July, 31) *Evaluation of Meningitis/Encephalitis (ME) Panel in the Detection of Infectious Organisms in CSF of Children*. Poster presented at LVHN Research Scholar Program Poster Session, Lehigh Valley Health Network, Allentown, PA.

This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

Evaluation of Meningitis/Encephalitis (ME) Panel in the Detection of Infectious Organisms in CSF of Children

Alyssa Scott and Tibusay Villalobos-Fry, MD, FAAP
Lehigh Valley Health Network, Allentown, Pennsylvania

BACKGROUND

- Central nervous system (CNS) infections are a common reason for admission of infants and children to the hospital and can lead to significant morbidity and mortality¹
- Traditional diagnostic tests, such as bacterial culture, are limited in their sensitivity and turnaround time^{2,3}
- The Biofire FilmArray™ Meningitis/Encephalitis (ME) Panel is a multiplex PCR panel that detects 14 bacteria, viruses, and yeasts in cerebrospinal fluid (CSF)
- This ME panel was approved by the FDA in October 2015, and was implemented at LVHN in February 2016
- This new molecular test may be of clinical value due to its high sensitivity, rapid turnaround time, and ability to test for multiple pathogens simultaneously^{1,2,4}

OBJECTIVES

- The aim of this study is to evaluate the ME panel in children admitted to the Lehigh Valley Children's Hospital by:
 - Comparing the ME Panel results to traditional bacterial culture
 - Analyzing clinical impact by measuring test turnaround time, length of hospital stay, and antimicrobial duration

METHODS

Retrospectively reviewed all FilmArray™ ME panels results from February 1, 2016 to May 31, 2017 for patients <18 years of age

Collected the following data from EPIC™: demographic information; admission and discharge dates; ME panel and culture results; time of sample collection and results; and antimicrobial duration

Analyzed collected data; used two-sample t-tests for analysis of turnaround time, length of hospital stay, and antimicrobial duration

RESULTS

Figure 1. Overview of ME panel results. All patients with a positive ME panel were <2 years of age.

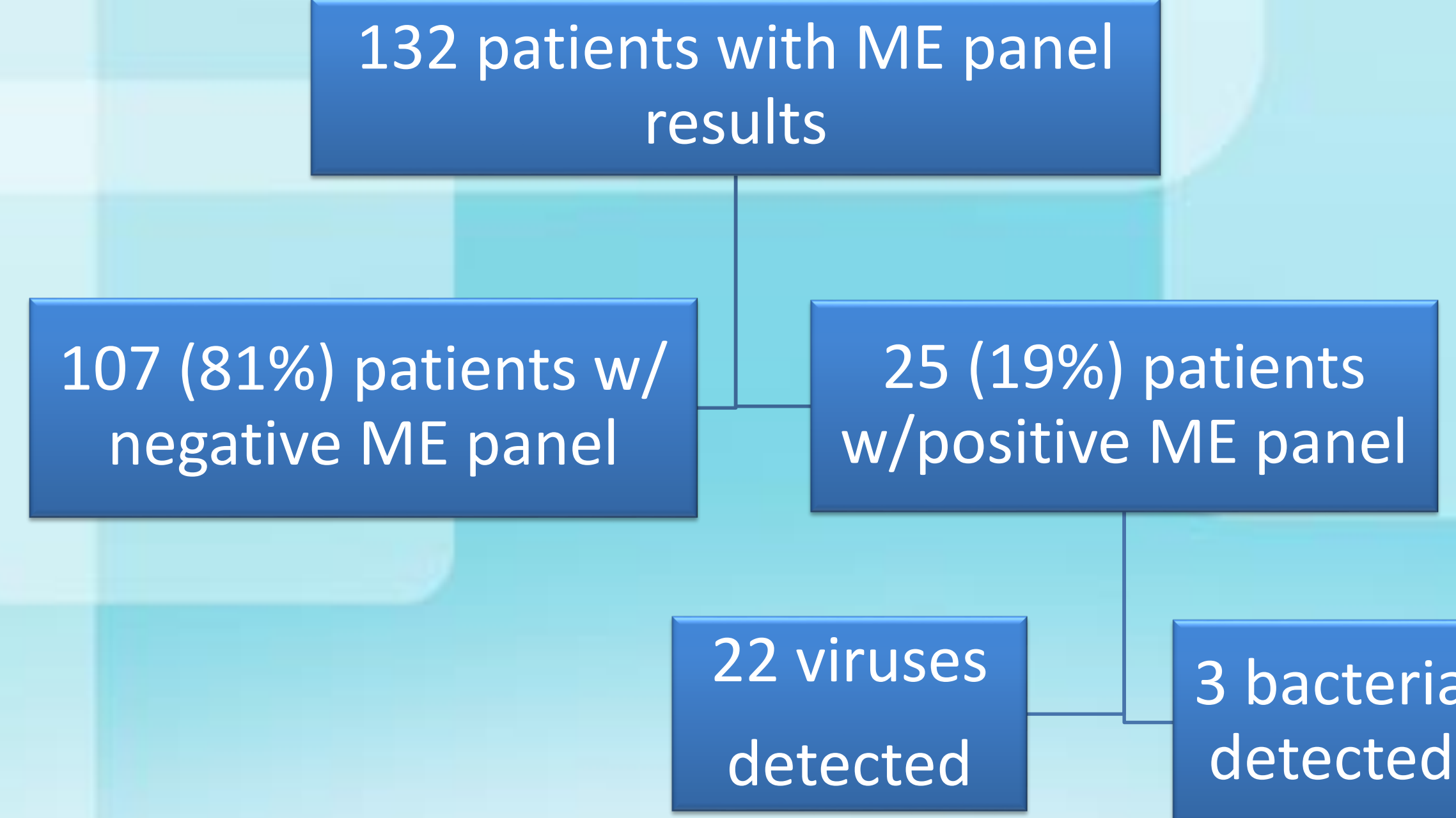


Figure 2. Viruses identified by ME panel.

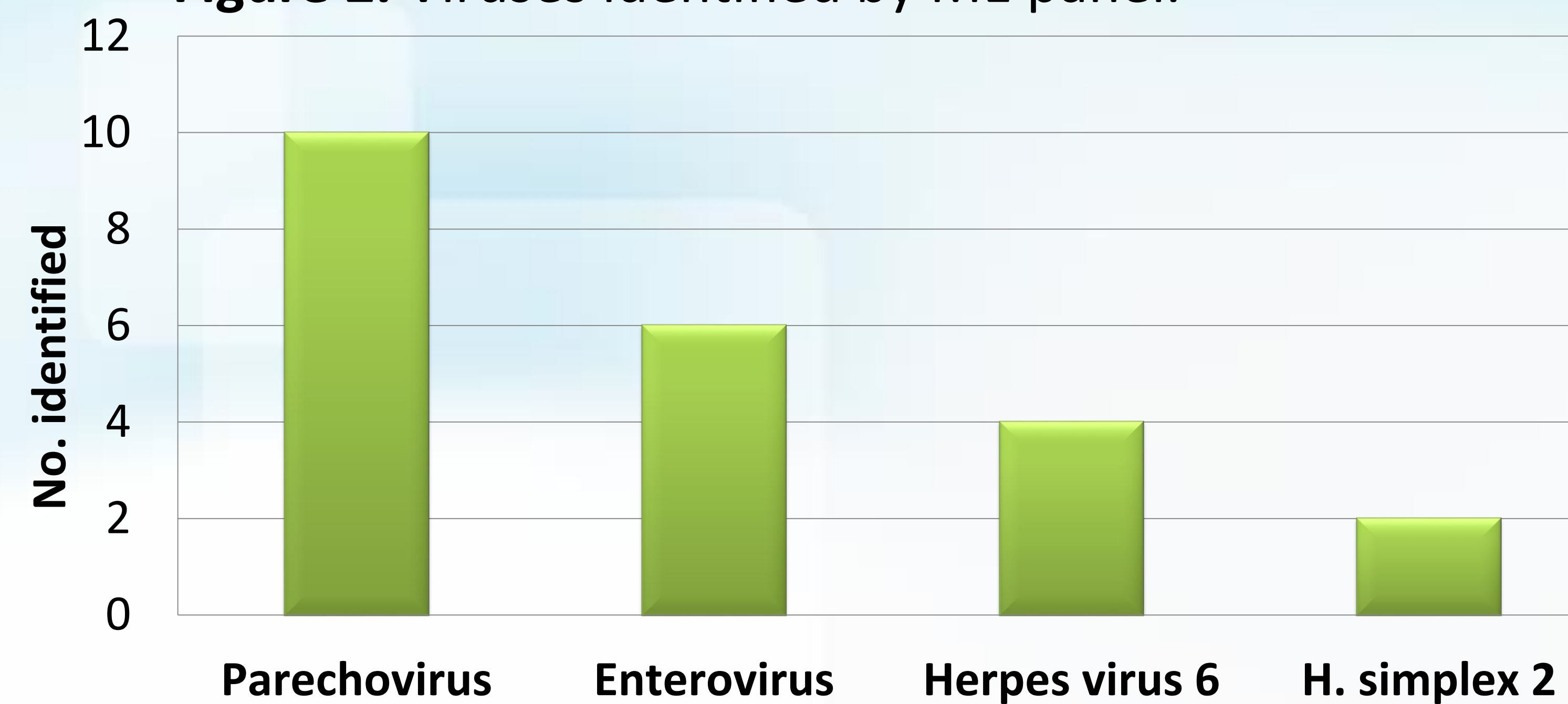


Table 1 Comparison of turnaround time for ME panel and CSF culture

Test	No. of results	Avg. turnaround time (hrs)	Range (hrs)
ME panel	132	7.2*	(2.5-46.6)
CSF culture	131	28.4*	(13.1-84.1)

*significant difference between values ($P < .05$)

Table 2 Length of hospital stay for patients with positive and negative ME panels

ME panel result	Avg. length of hospital stay (days)	Range (days)
Bacteria detected	19	(7-26)
Virus detected *	3.1**	(1-10)
Negative	7.4**	(0-132)

*HSV excluded from calculations

**significant difference between values ($P < .05$)

Table 3 Antimicrobial duration in patients with positive and negative ME panels

ME panel result	No. of patients	Avg. max duration of antimicrobials (days)
Bacteria detected	3	21
Virus detected*	20	1.6**
Negative ME panel	107	3.8**

*HSV excluded from calculations

**significant difference between values ($P < .05$)

Table 4 Acyclovir duration in patients with possible HSV infection

ME panel result	No. of patients	Avg. duration of acyclovir (days)
HSV detected	2	20.5
HSV not detected	36	0.89

CONCLUSION

- The faster turnaround time of ME panel compared to traditional culture is valuable in making earlier decisions about appropriate antimicrobial therapy
- Negative ME panel results for HSV allow for earlier discontinuation of empiric acyclovir therapy (<24 hrs)
- Future studies are needed to further look into the clinical impact of the ME panel, specifically the impact on antibiotic use

© 2017 Lehigh Valley Health Network

610-402-CARE LVHN.org