

329. Impact of the Biofire® Film Array (FA) Meningitis Encephalitis (ME) Panel in Colombia

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Background. Central nervous system (CNS) infections are associated with significant adverse clinical outcomes. Approximately 50% of all CNS infections are idiopathic. The impact of the Biofire® FAME in Colombia is unknown.

Methods. A retrospective study of all adults with CNS infections in one tertiary hospital in Colombia. The cohort was divided into two time periods: before and after the implementation of the Biofire® FAME panel in May 2016. Etiologies, management decisions, and outcomes were compared between both groups. Data analysis was done with Stata® version 14.

Results. A total of 76 patients were enrolled. The majority of the patients (72.4%) were male with a median age of 40.9 years. The most common comorbidity was Human immunodeficiency virus (HIV) infection (47.4%); 54% were admitted to the intensive care unit (ICU) and 29% died. Out of the 76 patients, 33 and 43 were enrolled in the pre- and post-Biofire FAME testing periods, respectively. A diagnosis was made more commonly in the post-Biofire time period (13/33;39% vs. 27/43;63%, $P < 0.05$). The etiologies in the pre-Biofire group were *Cryptococcus neoformans* (6); bacterial meningitis (5) and tuberculosis (1) and varicella zoster (1); and the etiologies in the post-Biofire group were *Cryptococcus neoformans* (7), cytomegalovirus (CMV) (4); bacterial meningitis (4), tuberculosis (3), syphilis (3), ADEM (3), CNS vasculitis (1), and neurocysticercosis (1). The Biofire FAME panel was positive in 14 patients: *C. neoformans* (6), CMV (3), *S. pneumoniae* (2), *Herpes simplex virus type 2* (2), *H. influenzae* (1) and *N. meningitidis* (1). In 12 out of those 14 patient (85%), a change in therapy occurred due to the FAME results (5 started therapy, four stopped therapy and three had a change in therapy). Furthermore, patients in the post-Biofire FAME period had a reduction in the empirical use of vancomycin, meropenem and cefepime ($P < 0.05$). The Biofire FAME panel missed identifying one patient with *Cryptococcus neoformans* and one with CMV.

Conclusion. The introduction of the Biofire FAME panel in a hospital with high HIV prevalence in Colombia has increased the yield of pathogens identified and have reduced the use of empirical antibiotic therapy. The Biofire FAME failed to identify one case of *Cryptococcus neoformans* and one due to CMV.

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330. Head and Spine Injuries Increase Risk of *Streptococcus pneumoniae* Meningitis in Adults

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Background. In the United States, *Streptococcus pneumoniae* is responsible for 50% of bacterial meningitis cases. However, pneumococcal vaccines were not recommended for routine childhood immunization until pneumococcal conjugate vaccine became available in 2000, and much of the adult population has not received pneumococcal conjugate or polysaccharide vaccine. Limited case reports and series suggest that a history of neurosurgery or skull fractures may be associated with an increased risk for pneumococcal meningitis.

Methods. A case-control study was conducted within the Kaiser Permanente Northern California (KPNC) patient population to evaluate the association of prior head injury (HI) or head or spine surgery (H/SS) with pneumococcal meningitis. Cases were pneumococcal meningitis patients ≥ 18 years of age diagnosed from January 1, 2008 through October 31, 2017. Controls were individually matched 2:1 by age, sex, KPNC facility and membership length. A blinded chart review was done to identify history of HI and H/SS. Analyses were performed using conditional logistic regression.

Results. Eighty-four patients were found to have pneumococcal meningitis and were matched with 168 controls. Fifteen of the 84 cases (17.9%) and 6 of the 168 controls (3.6%) had prior HI or H/SS. Case histories included concussion ($n = 3$), mastoidectomy ($n = 2$), nasal surgery ($n = 3$), neurosurgery ($n = 3$), and spine surgery ($n = 5$). One case was noted to have two surgical histories. Ten of the 15 cases with HI or H/SS (66.7%) had not received pneumococcal vaccine. Cases had 5.0 times higher odds of having a history of HI or H/SS (95% confidence interval (CI) 1.9–12.9). These odds remained significantly elevated for H/SS only (odds ratio (OR) 10.0, 95% CI 1.2–85.6), but not for HI (OR 3.0, 95% CI 0.5–18.0). As no skull fractures were detected, HI consisted of concussions only.

Conclusion. Prior HI or H/SS significantly increased the odds for pneumococcal meningitis. Surveillance data from the Centers of Disease Control and Prevention indicate that 60–75% of invasive pneumococcal disease in adults is due to serotypes included in the pneumococcal vaccines. Given the number of unvaccinated cases, some of these cases may have been vaccine preventable. Such patients may benefit from pneumococcal immunization to reduce the risk of pneumococcal meningitis.

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331. Vascular Complications Among Children and Adolescents With Acute Complicated Sinusitis

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Background. The characteristics of intracranial vascular complications in children from bacterial sinusitis is not well known. The objectives of the study were to describe the types of vascular complications and pathogens in acute complicated sinusitis and identify the proportion of vascular complications due to *Streptococcus anginosus* vs. other pathogens.

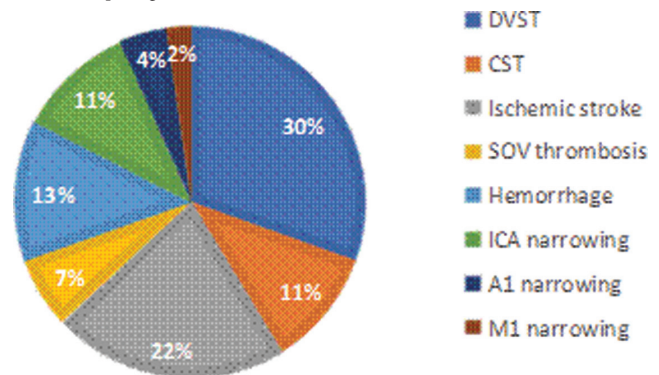


Figure 1: Vascular complications: DVST: dural venous sinus thrombosis; CST: cavernous sinus thrombosis; SOV: superior ophthalmic vein; ICA: internal carotid artery; A1: anterior cerebral artery, division 1; M1: middle cerebral artery, division 1

Methods. We conducted a retrospective cohort study by identifying hospitalized patients with ICD 9/10 codes of acute sinusitis at Children's Hospital Colorado from 2010–2016. After identifying patients with complicated sinusitis (bacterial meningitis, intracranial abscess/empyema, venous thrombosis, stroke, or orbital cellulitis/abscess based on ICD 9, ICD 10, or imaging findings), we reviewed patient demographics, clinical characteristics, and clinical outcomes. Patients with cultures positive for *S. anginosus* were compared with other patients who met inclusion criteria. Bivariable relationships were examined using χ^2 tests and t -tests or Wilcoxon rank-sum tests.

Results. Among 416 inpatients with acute sinusitis, 235 had acute complicated sinusitis. Of these, 75 were excluded due to immunocompromised status, cystic fibrosis, craniofacial abnormality, and fungal disease. The most common pathogen was *S. anginosus*, identified in 64/160 (40%) cases. Vascular complications were observed in 21/160 (13%) children (Figure 1). The rate of vascular complications was higher in the *S. anginosus* group, compared with the non-*S. anginosus* group, although not reaching a statistical difference (18% vs. 9%, $P = 0.085$). The most common vascular complication was dural venous sinus thrombosis (30%). Children with *S. anginosus* infection were older (11.8 vs. 7.2 years), had an abnormal MRI (97% vs. 68%) and neurological deficit (56% vs. 35%), and required surgery (98% vs. 35%), longer antibiotic duration (42 vs. 16 days), and ICU admission (34% vs. 11%), $P < 0.01$ unless otherwise mentioned.

Conclusion. Vascular complications among children with complicated sinusitis are common, with a high proportion due to *S. anginosus*. There is a greater burden of disease from *S. anginosus* compared with other bacterial pathogens as demonstrated by worse neurologic and radiographic outcomes in this group.

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332. Phaeohiphomyces Due to *Scopulariopsis brumptii* in a Hematopoietic Stem Cell Transplant (HSCT) Recipient

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