

Distinguishing Bacterial from Aseptic (Viral) Meningitis: A New Clinical Prediction Rule

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Being able to differentiate between bacterial and aseptic (viral) meningitis is often easier said than done, leading to potentially unnecessary treatment while awaiting culture results. Mintegi et al ([10.1542/peds.2020-1126](#)) introduce us to a new clinical prediction rule in a study being released this month in our journal. The authors developed a predictive rule using a retrospective cohort of children between the ages of 29 days and 14 years seen in 25 emergency departments in Spain between 2011 and 2016, which was then validated prospectively between 2017 and 2018. What makes this new rule unique is its use of additional biomarkers like procalcitonin and a C-reactive protein. The rule suggests that you should strongly suspect bacterial meningitis with a procalcitonin > 1.2 mg/mL, cerebrospinal fluid (CSF) protein > 80 mg/dL, CSF absolute neutrophil count > 1000 cells/mm³ and C-reactive protein >40 mg/L. The authors created a score system based on these findings (the "Meningitis Score for Emergencies" (MSE)) assigning 3 points for elevated procalcitonin, 2 points for elevated CSF protein, and 1 point for several other factors. In the validation set, an MSE 1 has a sensitivity of 100%, specificity of 77.4% and negative predictive value of 100% for bacterial meningitis.

Is this rule worth trying? Although the authors did validate the rule, there were only 190 patients in the validation set compared to the 819 in the derivation set. On the other hand in this study, the MSE did perform better from than the Bacterial Meningitis Score (BMS) which uses CSF positive gram stain, ANC 1000 cells/microliter, CSF protein 80 mg/dL, peripheral blood ANC 10,000, and seizure at or prior to initial presentation as the criteria for its scoring. The next time you have a child presenting with a CSF pleocytosis, consider trying both scoring systems to see if the MSE performs better than the BMS. Either way, let us know which rule you prefer by sharing your thoughts and results via a response to this blog, a comment added with the study's posting on our website, or on our social media sites (Facebook, Twitter, and/or Instagram). Tap into this study and learn more about the MSE before your next patient with meningitis arrives into your practice or the emergency department.

- [A Prediction Model to Identify Febrile Infants 60 Days at Low Risk of Invasive Bacterial Infection](#)
- [Validation of a Novel Assay to Distinguish Bacterial and Viral Infections](#)
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