Febrile Infants Less Than Two Months of Age: Do They All Need a Lumbar Puncture?

by Lewis First MD, MS, Editor in Chief, Pediatrics

For decades we have been working to improve the evaluation of the febrile infant. A febrile infant less than one month of age still makes most if not all pediatricians move forward with a full sepsis evaluation, but what about infants from 1-2 months of age? Does every febrile infant viewed as low risk need a lumbar puncture? The Rochester criteria (pmid:4067741) do not require CSF to be obtained if other diagnostic criteria suggest there is a low risk for serious bacterial infection. In contrast, the Philadelphia criteria, originally called for a negative lumbar puncture for an infant to be considered "low-risk" for serious bacterial infection, which were later modified to not require a lumbar puncture if the infant was classified as low-risk by the other Philadelphia criteria (pmid:28526220). While both the Rochester and modified Philadelphia criteria are frequently used by clinicians to determine which infants should be hospitalized and treated with intravenous antibiotics until the cultures are available, the comparative accuracy of these approaches has been uncertain. That is until Aronson et al. (10.1542/peds.2018-1879) did a case-control study of febrile infants 60 days of age seen in one of 9 pediatric emergency departments from 2011-2016. The authors compared infants with bacteremia or meningitis and a positive bacterial culture with febrile infants who did not grow a pathogen to compare the validity of the Rochester criteria or Modified Philadelphia criteria. Overall, the modified Philadelphia criteria had higher sensitivity (91.9 vs 81.5%) but lower specificity (34.5% vs 58.9%). For infants in this study >28 days, the Philadelphia criteria did not classify anyone with meningitis as low risk, but there were some infants with bacteremia classified as low risk. Thus, neither the Rochester or Modified Philadelphia criteria are foolproof, so choosing not to do an LP requires that families understand the risk and that close follow-up is arranged.

So what does this study tell us as to how to approach febrile infants under two months with fever? Should we stop doing lumbar punctures in children classified as low-risk, assuming there is close follow-up? Not necessarily, according to Dr. Doug Baker, specialist in pediatric emergency medicine, Chief of Population Health at Johns Hopkins, and first author of the original Philadelphia criteria, who weighs in with an accompanying commentary (10.1542/peds.2018-2861). Dr. Baker notes that the original Philadelphia criteria with an LP had higher sensitivity. Both the study and commentary provide new insights into a hot topic that still leaves a key part of the decision making based on our clinical judgment and good close follow-up, whether or not you opt to perform the LP. Would you change your practice approach to febrile infants after reading this study and reduce the number of lumbar punctures ordered if an infant is considered “low-risk?” Share with us your thoughts by responding to this blog, posting a comment on our website or on our Facebook or Twitter pages.