Effect of RVP results on length of stay for neonatal fever patients with negative sepsis evaluations

Katherine L. Keith, M.D., Rustin Morse, M.D.

Pediatrics, Children’s Medical Center, Dallas, TX

Introduction
Fever ≥38°C is a common presenting complaint for infants <90 days old. Although most will prove to have a viral illness, ~8.5% of these infants will have a serious bacterial infection (SBI), including urinary tract infections, bacteremia, and meningitis.

Given the potentially severe consequences of a missed SBI past guidelines have recommended hospital admission with a full sepsis evaluation and antibiotic treatment pending negative culture results at 48 hours for all febrile infants less than two months of age. However, the need for a full 48-hour inpatient stay has been increasingly called into question. Pediatric blood cultures have a high negative predictive value after just 24 hours of incubation. Meanwhile, with the rise in availability of rapid viral testing it has been shown that a confirmed viral infection significantly decreases a patient’s chance of having a concurrent SBI.

Physicians in our facility frequently order a respiratory viral panel (RVP) to search for a fever source in febrile neonates, looking for a possible viral illness. Our study evaluated the impact of a negative RVP result on the length of stay for neonatal fever patients ≤28 days of age with a negative sepsis evaluation.

Materials and methods

- Identified all patients aged ≤28 days admitted between 6/1/13 and 9/30/14 with diagnosis of fever
- Excluded all patients with the following:
  - URI symptoms
  - Patients with URI symptoms at admission
  - Excluded all patients with the following:
    - Patients with URI symptoms at admission
    - Excluded all patients with the following:
      - Patients with URI symptoms at admission
      - Excluded all patients with the following:
        - Patients with URI symptoms at admission
        - Excluded all patients with the following:
          - Patients with URI symptoms at admission

- Also excluded patients with positive cultures not identified by the above ICD-9 codes, those with cultures done at an outside facility, and those for whom a CSF culture could not be obtained
- Performed chart review to determine:
  - Length of stay (LOS) for each patient, measured as time in hours between blood culture being drawn and the time of discharge
  - RVP results if available
  - Presence or absence of URI symptoms, defined as cough, congestion, and/or rhinorrhea documented in the admission H&P

Conclusions

- In our facility neonatal fever patients ≤28 days of age with negative sepsis evaluations and confirmed viral infection on RVP are discharged ~5 hours earlier on average than those with a negative RVP result.
- However, they are not discharged any sooner than those who present with URI symptoms who do not have an RVP sent.

Results

- A total of 167 patients ≤28 days of age were admitted for neonatal fever and found to have negative sepsis evaluations during the study period. An RVP was sent for 86 of these patients (52%). The average LOS for all patients was 46.24 hours.
- Patients with a confirmed viral infection on RVP were discharged significantly earlier than those with a negative RVP (44.55 hours vs. 49.20 hours, p=0.03, see Table 1).
- However, among those patients who did not have an RVP sent those with URI symptoms at presentation were likewise discharged significantly earlier than those without URI symptoms (43.68 hours vs. 46.79 hours, p=0.022, see Table 2).
- There was no difference in length of stay for patients with confirmed viral infection on RVP compared to those with URI symptoms at admission who did not have an RVP sent (44.55 hours vs. 43.68 hours, p=0.649, see Table 3).
- Of note, 84% of patients with a positive RVP had URI symptoms at admission.

Acknowledgments

Thanks to Rustin Morse for all of his guidance and assistance. Thanks to Angela Bartlett for her help with data acquisition.

References

Roberts KB. Young, febrile infants: a 30-year odyssey ends where it started. JAMA. 2004;291(10):1261-1262