

Title of case: 40 day old female with fever

Authors: Jasperse, Nathan

Faculty reviewers: Sarah Gustafson and Patricia Padlipsky

Email: njasperse@dhs.lacounty.gov

Affiliations: Harbor-UCLA Medical Center, Torrance, CA

Date case created: 02/10/2022

Learning Objectives: KAS 15-21

HPI: A 40 day old female, ex full term, born via normal spontaneous vaginal delivery at 39 weeks and 2 days, is brought to the Emergency Department by her parents for fever for 2 days. Parents note that the patient felt warm to the touch so they measured her temperature which was 38.1°C orally. Patient has had mild nasal congestion and rhinorrhea and has been taking less formula today than usual. The parents deny that the patient has had any cough, vomiting, or diarrhea. Today she has made 4 wet diapers and 2 stools. Patient has siblings in day care but no one else at home is sick.

Pertinent ROS:

- Fever, congestion, rhinorrhea
- No cough, shortness of breath, vomiting, diarrhea, or rashes

Birth hx: Ex 39 weeks and 2 days, NSVD, no NICU, GBS negative, mother had prenatal care throughout her pregnancy

PMH: None

PSH: None

Meds: None

All: No known allergies

Imm: Received HBV vaccine at birth

Dev: normal for age

Social hx: Lives with parents and two older siblings

Family hx: None pertinent

Vitals: temp 38.3°C, HR 139, RR 40, BP 75/49, O₂ saturation 98%

PE:

GENERAL APPEARANCE: well-nourished, well developed

HEAD: anterior fontanelle open, soft, & flat, normocephalic, atraumatic

EYES: conjunctiva, sclera, & pupils normal

EARS: normal position & rotation; tympanic membranes clear bilaterally

NOSE: passages patent, scant clear rhinorrhea bilateral nares

MOUTH: palate intact; no oropharyngeal erythema or exudates

NECK: supple, no masses palpated, clavicles intact

HEART: RRR, normal S1 & S2, no m/r/g

PULSES: 2+ brachial & femoral pulses bilaterally

LUNGS: CTA bilaterally, no tachypnea/retractions

ABDOMEN: soft, non-tender, non-distended; no masses, no hepatosplenomegaly

GU FEMALE: normal appearance, no lesions, erythema or discharge

EXTREMITIES: no deformities, full range of motion

SKIN: no significant lesions, no rashes, no nevus simplex, no mongolian spots

BACK: no midline defects

NEURO: alert, cries but consolable; good Moro, suck, & grasp reflexes; normal tone & strength

Question 1. Based on the patient's history and physical exam, which of the following labs would be most appropriate to obtain?

- Urinalysis, urine culture
- Urinalysis, urine culture, CBC, blood culture
- Urinalysis, urine culture, CBC, blood culture, CRP, procalcitonin**
- Urinalysis, urine culture, CBC, blood culture, CRP, procalcitonin, CSF studies

Explanation: While the presence of bacteremia and risk of bacterial meningitis is less in infants ages 29-60 days than in the younger groups, the prevalence of bacteremia is still high enough to warrant a blood culture. The AAP also recommends initially collecting a urine sample by bag, spontaneous void or stimulated void for urinalysis and, if urinalysis is positive, subsequently obtaining a catheterized specimen for culture, as specimens obtained by methods other than

catheterization are often contaminated. The prevalence of invasive bacterial infection is less in this age group but inflammatory markers are still warranted: temperature $>38.5^{\circ}\text{C}$, procalcitonin $>0.5\text{ ng/mL}$, CRP $>20\text{ mg/dL}$, and ANC $>4000\text{-}5200/\text{mm}^3$.

Learning goal: KAS 15-17

Question 2. The patient's urinalysis results with negative leukocyte esterase, negative nitrites, 0-3 WBC/hpf and no bacteria. CBC is within normal limits. ANC is 1800 cells/mm^3 ($1000 - 9000\text{ cells/mm}^3$). CRP is 0.4 mg/dL ($0\text{-}0.75\text{ mg/dL}$) and procalcitonin is 0.19 ng/mL ($<0.25\text{ ng/mL}$). Given these results, which of the following is correct regarding obtaining CSF studies?

- a. CSF studies should be obtained
- b. CSF studies may be obtained
- c. CSF studies do not need to be obtained if empiric antibiotics are administered
- d. CSF studies need not be obtained**

Explanation: If all inflammatory markers are negative, then CSF studies need not be obtained in well appearing infants ages 29-60 days. If all inflammatory markers are negative, a positive urinalysis is also not an indication for LP. Because of the decreased prevalence of bacterial meningitis in this age group, if all inflammatory markers are negative, the chance of missing a case of bacterial meningitis is estimated to be 0.025%.

Learning goal: KAS 18

Question 3. CSF studies are not obtained. What is the appropriate treatment and disposition of this patient?

- a. Admit to the hospital with parenteral antibiotics
- b. Administer dose of parenteral antibiotics in the ED and discharge home
- c. Discharge home with oral antibiotics
- d. Discharge home without antibiotic treatment**

Explanation: Patients that are 29-60 days old with a negative urinalysis and negative inflammatory markers (and negative CSF studies, *if* CSF studies are obtained), may be discharged home without antimicrobial therapy. The low risk of bacteremia and meningitis in this age group allows for the management of these patients while avoiding hospitalization. This should only be done if the clinician deems the patient's parents to be reliable and able to follow up in 24 hours with the patient's pediatrician or in the ED. Parents need to be provided clear and strict return precautions.

Learning goal: KAS 19-21

Case resolution: Patient is seen in her pediatrician's office the next day where she is noted to be afebrile. Parents state she has begun to take more formula and have her normal number of wet diapers

and stools. Blood and urine cultures end up being negative. At her next scheduled office visit, patient is doing well.

Citations:

Pantell R H, Roberts K B, Adams W G, et al. Evaluation and Management of Well-Appearing Febrile Infants 8 to 60 Days Old. *Pediatrics*. 2021;148(2):e2021052228

1. 29-60 days with positive UA and neg IM → oral antibiotics and can dc with follow up
2. 22-28 days with positive IM → LP
3. 24-36 hour culture for discharge