

Abstract:

A 10-day-old infant presented to the emergency department with a chief complaint of weight loss and was discovered to be hypothermic with decreased respiratory drive. His initial management focused on resuscitation, management of impending respiratory failure, and empiric treatment for sepsis. Ultimately, laboratory results and a bedside ultrasound revealed the true cause of his symptoms: hypertrophic pyloric stenosis.

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Keywords:

neonate; failure to thrive; respiratory failure; apnea; alkalosis; pyloric stenosis

*Division of Emergency Medicine, Ann and Robert H. Lurie Children's Hospital of Chicago, Chicago, IL; †Department of Pediatrics, Northwestern University Feinberg School of Medicine; ‡Cook Children's Hospital, Fort Worth, TX. Reprint requests and correspondence: Emily C.Z. Roben, MD, Division of Emergency Medicine, Ann and Robert H. Lurie Children's Hospital of Chicago, Chicago, IL 60611. eroben@luriechildrens.org

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Can't Eat, Won't Breathe

Emily C.Z. Roben, MD*†, Stephanie F. Moses, DO‡

A 10-day-old full-term male infant was referred to the emergency department (ED) by his pediatrician for weight loss. Initially after leaving the hospital (on day 5 of life), he had been feeding well, waking every 2 hours to breastfeed. Over the past day, he has been feeding poorly, not latching as well as before. When he does latch, he does not seem to be feeding as vigorously. He spits up or vomits almost all of what he takes in. Most concerning to the parents is that he seems “not himself.” When asked to clarify, they relay that he is very sleepy and not active. His urine output and stool output have been normal, and he has had no fevers. He has a little bit of runny nose, but no coughing or difficulty breathing. There are no sick contacts in the home.

The patient was seen the morning of ED presentation by his pediatrician, who has been following him closely for weight checks. At his first appointment on day 5 of life, he was 10% down from his birthweight. The day prior to presentation, he was down 14%, and this morning he was down 18%. With the new symptoms of poor feeding and the persistent weight loss, the pediatrician instructed the parents to take the baby to the ED for further evaluation and management.

The patient was born full term via caesarian delivery for failure to progress. He was small for gestational age, with a birth weight of 5 lb 15 oz (2690 g). The pregnancy was complicated by premature contractions at 29 weeks, which required a 24-hour observation admission. Mom was group B *Streptococcus* negative and had all normal prenatal laboratory test results. Mom developed a fever after the delivery and was treated with intravenous (IV) clindamycin for endometritis versus wound infection. He stayed in the newborn intensive care unit (NICU) for 5 days because of feeding difficulties and hypoglycemia. He never required antibiotics or nasogastric feeds but did get IV dextrose for approximately 48 hours while working on feeding.

The patient is the first child for this married couple. Dad works full time, and mom stays at home with the child. There are no

other caregivers for the baby. There are no smokers in the home. The family medical history is unremarkable.

On arrival to the ED, the following vital signs were obtained: temperature 35.5°F, heart rate 110, respiratory rate 12, blood pressure 84/53 mm Hg, oxygen saturation 98% in room air, and weight 2.24 kg (17% down from birth weight). On general appearance, the baby was awake, thin, and pale. He cried with some examination maneuvers but was overall very quiet. His HEENT examination was notable for a flat anterior fontanelle, and normally placed ears and eyes. He had moist mucous membranes and intact frenulae. His neck was supple, with no lymphadenopathy and intact clavicles. His chest examination revealed clear lung sounds throughout and no signs of increased work of breathing. His heart had a regular rate and rhythm, with normal heart sounds, and no murmurs. His pulses were palpable in the upper and lower extremities. His abdomen was soft, nondistended, and nontender. No masses or organomegaly were appreciated. His bowel sounds were normal, and his umbilical stump was present and normal-appearing. He had a circumcised penis with palpable testicles, and his gluteal cleft was straight without tufts or dimples. His extremities were thin and warm with no edema. His skin was pale throughout, although his face was pink. He had no rashes or bruises. On neurologic examination, he had intact cranial nerves and was moving all extremities with normal tone. He had intact Moro and suck reflexes, and he had a normal-sounding cry.

Based on this presentation of weight loss, poor feeding, lethargy, pallor, hypothermia, bradycardia, and bradypnea, the initial workup was focused on diagnosing and managing sepsis. A complete blood count, blood culture, chemistry panel, urinalysis, and urine culture were obtained. He had a peripheral IV placed and received a 20-mL/kg bolus of normal saline. As the nurses and paramedics were performing the laboratory tests, the baby seemed abnormally quiet. His respiratory rate was checked frequently and always measured at 10-12 breaths per minute. He cried minimally with IV attempts and urine catheterization. His heart rate was never greater than 115 beats per minute and was as low as 90. After the laboratory samples were sent, the ED physician entered the examination room to check on the child and to discuss the lumbar puncture with his parents. At that time, the patient had a 20-second period of apnea without oxygen desaturation. He was immediately moved to the resuscitation bay for further management of his respiratory failure.

A flow-inflating bag with 100% oxygen was placed on the baby's face and was very agitating; he cried and was much more awake with this positive pressure. In lieu of immediately intubating him, the respiratory therapist placed him on a high-flow nasal cannula in hopes of stimulating his respiratory drive. This was not successful, and in fact, he fell asleep and had respiratory rates below 10. His oxygen saturation remained in the high 90s, and his heart rate remained around 110 throughout this time. Because of his decreased respiratory drive, he was intubated for impending respiratory failure with a 3.0 uncuffed endotracheal tube. Prior to intubation, he was premedicated with fentanyl, Versed, and rocuronium. Around this time, initial laboratory results returned: his complete blood count showed a white blood cell count of 8000, hemoglobin of 18 g/dL, and platelet count of 357 000. His white blood cell differential showed 54% neutrophils without bands. The complete metabolic panel demonstrated the following: sodium 145 mEq/L, potassium 3 mEq/L, chloride 92 mEq/L, bicarbonate 30 mEq/L, blood urea nitrogen 28 mg/dL, creatinine 0.4 mg/dL, and glucose 70 mg/dL. His liver enzymes were all within normal limits. His ammonia was 45 μ mol/L. The urinalysis revealed trace ketones and 1+ protein. A chest radiograph was obtained, which showed appropriate placement of the endotracheal tube, clear lung fields, and a normal heart silhouette. An electrocardiogram was obtained which showed sinus bradycardia.

The ED team discussed the patient with the NICU team, who stabilized the baby on a ventilator prior to performing a lumbar puncture and starting IV ampicillin and cefotaxime at meningitic doses. Later that night, a diagnostic study was performed which revealed the final diagnosis.

DIFFERENTIAL DIAGNOSIS

In the neonatal age group, infection is the first category of disease that must be considered in the care of an ill-appearing infant. Infections in this age group are extremely dangerous because of an immature immune system. Neonatal sepsis is a clinical syndrome of systemic signs of infection in a patient under 28 days of age.¹ Immediate testing and antibiotic treatment must take place because of many permanent and life-threatening complications that may occur. Risk factors for neonatal sepsis include maternal factors (history of intrapartum fever, chorioamnionitis, group B *Streptococcus* colonization, prolonged rupture of membranes) and neonatal factors (gestational age under 34 weeks, low birth weight, APGAR less than 6, and

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