Case Study 1: Neonatal/Mother Baby

A.J. is a 38-week gestational age neonate, born vaginally to a 33-year-old G 3, P 2 female with limited prenatal care. No prenatal records are available at the time of delivery. She admits to smoking tobacco and marijuana during the pregnancy. A rapid drug screen is positive for THC and opioids. Hepatitis B screen is negative with other laboratory studies pending. The neonate is vigorous and crying with good tone and color but is also intermittently irritable and difficult to console. A.J. is placed on mother’s chest to begin breastfeeding. The nurse notes small patches of small, fluid filled blisters around the eyes and mouth with scattered lesions to the trunk. Crusting with erythema is noted to some of the lesions. The most likely diagnosis for A.J. is:

a. cytomegalovirus
b. varicella- zoster virus
c. herpes simplex virus

See answers at the end of the document
Case Study 2: Neonatal/Mother Baby

C.C. is a neonate born emergently at 39-weeks’ gestation following a single car motor vehicle accident. Mother is 38 years-old, G 1, P 0. The mother’s prenatal records are not available at the time of delivery. A rapid drug screen is negative. The neonate is vigorous and crying following birth. Respiratory rate is 45 breaths per minute, heart rate 135 bpm, blood pressure 92/41 with a mean of 55. Postductal pulse oximetry reading is 92% while on room air. On day 2 of life, the mother is concerned because the baby is not feeding as well as he did the previous day. The nurse notes a high pitched, pansystolic murmur along the left sternal border. The neonatal nurse practitioner orders a chest x-ray and echocardiogram. The chest x-ray reveals enhanced pulmonary vascular markings and cardiomegaly. The most likely diagnosis for C.C. is:

a. coarctation of the aorta
b. ventricular septal defect
c. atrioventricular canal
**Case Study 3: Neonatal/Mother Baby**

A male infant born at 32-weeks’ gestation to a 24-year-old G1 P1 mother presents at 10 days of life with a wet-appearing umbilical cord stump. The infant had an umbilical venous catheter (UVC) from DOL 0–5. The most likely diagnosis for this infant is:

- a. normal finding in an infant with a history of UVC
- b. patent urachus
- c. omphalitis

**Case Study 4: Mother Baby**

You are walking down the hall of the mother-baby unit when you hear a new mother crying for help. You open the door to her room and find her hovering over her new baby, who is apneic and blue. You unwrap the baby’s blankets, stimulate the baby, and suction the mouth and nose. The baby remains apneic and cyanotic. What is your most appropriate response?

- a. You ask the mother to go to the front desk and tell them that the baby is not breathing, then you pick up the baby and run to the nursery to find help.
- b. You check the baby’s heart rate with your stethoscope, and because the baby’s heart rate is less than 60 bpm, you yell for help and begin chest compressions immediately.
- c. You initiate the unit protocol for emergency help and start positive-pressure ventilation with the self-inflating bag located in every postpartum room.
- d. You initiate the unit protocol for emergency help and continue to suction and stimulate the baby while you reassure the mother and wait for help to arrive.
Case Study 5: Neonatal/Advanced Practice

An infant at 36 weeks, 5 days gestation was born via unscheduled cesarean section for pre-eclampsia. The infant weighed 5 lb 0.3 oz (2,275 g) with Apgar scores of 6 and 8 at one and five minutes, respectively. The pregnancy was complicated by obesity, gestational diabetes (on insulin therapy), chronic hypertension, and proteinuria in the third trimester. The infant appeared to transition well and remained with the parents in the operating room. The mother declined to breast feed; the infant took 22 mL of formula at 30 minutes of age. At two hours of age, a blood glucose check was done, and the infant was noted to be hypoglycemic with a whole blood glucose of 31 mg/dL (1.72 mmol/L). Glucose gel was administered, and the infant was fed 15 mL of formula. The blood glucose recheck 30 minutes later noted a blood glucose level of 17 mg/dL (0.94 mmol/L), prompting a second dose of glucose gel and admission to the NICU.

On admission to the NICU, blood for culture and a CBC with differential was drawn and a peripheral IV was started with an infusion of $D_{10} @ 70$ mL/kg/day. This infusion was then increased to $D_{12.5} @ 80$ mL/kg/day to stabilize blood glucose levels. Formula was fortified to 24 kcal/oz to assist in attaining euglycemia as well. Blood glucose levels continued to fall to a low of 32 mg/dL (1.78 mmol/L). An umbilical venous line was placed. Fluids were increased to $D_{15} @ 80$ mL/kg/day. With continued low blood glucose levels, glucose and fluids were further increased to $D_{20} \frac{1}{4}$ NS (normal saline) @ 90 mL/kg/day. Oral feeds were fortified to 26 kcal/oz. With this formula, the infant had a large volume emesis; feeds were then decreased to 24 kcal/oz.

The infant’s blood glucose levels stabilized on a glucose infusion rate (GIR) of 11.9 mg/kg/minute. IV fluids were then able to slowly be weaned to $D_{10}\frac{1}{4}$ NS. Due to poor growth, oral feeds were increased to 36 mL every three hours of 26 kcal/oz formula. Laboratory studies were within normal limits; the blood culture drawn at admission was negative on DOL 9.

Bloody stools began on the evening of DOL 7. These were initially thought to be due to an anal fissure noted on physical examination; however, bloody stools persisted. A KUB x-ray was ordered. The infant’s abdominal girth at birth was 28 cm. On DOL 9 it measured 26.5 cm. After viewing the abdominal film, what is the most appropriate course of action?

a. Resume feeds at 20 kcal/oz, decrease volume by half; continue peripheral intravenous fluids to maintain adequate blood glucose.
b. Place infant NPO, start necrotizing enterocolitis (NEC) protocol for your unit; continue peripheral intravenous fluids to maintain adequate blood glucose.

c. Resume feeds at 26 kcal/oz, decrease volume by half; continue peripheral intravenous fluids maintain adequate blood glucose.
Case Study 1: Neonatal/Mother Baby

**Answer:** C

**Rationale:** Herpes simplex virus (HSV) is a double-stranded virus with two types, HSV-1 and HSV-2. HSV-1 typically involves the skin above the waist. HSV-2 typically involves the genital area and skin and is the primary cause of neonatal disease. Transmission is vertical. Neonates with disseminated HSV present with skin vesicles, scarring, microcephaly, meningoencephalitis, keratoconjunctivitis, and liver failure. For non-disseminating disease, localized skin, eyes, and mouth (SEM) disease may be noted. The remainder of symptoms may be localized to eyes and oral mucosal lesions only.

Case Study 2: Neonatal/Mother Baby

Answer: B

Rationale: Ventricular septal defect (VSD) is an abnormal opening in the septum between the right and left ventricles. Defect size can range from pinhole to almost complete absence of the ventricular septum. Clinical manifestations of a VSD are dependent on the size of the defect. For a small VSD, the patient may be asymptomatic with a high-pitched pansystolic murmur along the left sternal border. For moderate defects, a murmur will be present with increased fatigue with feeding and possible respiratory symptoms. For large VSDs, patients may present with respiratory distress/failure, a loud murmur, increased pericardial activity, hepatomegaly, and cardiomegaly on chest x-ray.

Case Study 3: Neonatal/Mother Baby

Answer: B

Rationale: (a) Once a UVC is removed there should be no discharge from the cord. This is not an expected finding. (b) A patent urachus is an embryologic remnant that connects the bladder to the umbilical cord/navel. The most common presentation of a patent urachus is a moist umbilical cord secondary to ongoing fluid leak. (c) In addition to a moist cord, an infant with omphalitis will have a warm and erythematous area around the cord. Pus-like discharge from the umbilical stump may also be present.


Case Study 4: Mother Baby

Answer: C

Rationale: Every mother-baby/postpartum unit should have a standard protocol for summoning help in the event of a newborn emergency. This system should be simulated and tested on a routine basis to ensure that the system works, and health care professionals know how to initiate resuscitation with the self-inflating bag that is accessible in a standard location in every mother’s room.
Case Study 5: Neonatal/Advanced Practice

Answer: B

Rationale: X-ray findings suggest concern for pneumatosisis/necrotizing enterocolitis. There is stable appearance of the curvilinear lucencies within the colonic wall. No portal venous gas or large volume free air. The visualized osseous structures are unremarkable.