Still More Interesting Cases from the Neonatal Intensive Care Unit

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Case 1
Case 1

**Background:**

- 3.3 kg product of a term, uncomplicated pregnancy
- Mother was a 21 year old G1 with normal prenatal labs, except for a positive GBS
- Single, father of the baby involved
- No medical conditions
- Maternal blood type: O positive
Labor and delivery:
- Labor induced – reason not documented
- Multiple episodes of late decelerations during labor
- Reported that mom pushed “for a long time”
- AROM 12 hours prior to delivery – clear fluid
- 4 doses of antibiotics prior to delivery
- SVD with Apgars of 3, 5, and 6 at 1, 5, and 10 minutes, respectively
- Tight nuchal cord – required clamping and cutting to deliver the baby
- Required PPV for the first “several minutes” of life
• Physical Examination
  ◦ At approximately 10 minutes of age
    • Extremely pale, term infant
    • Centrally pale pink
      ◦ RA saturations 83-85%
    • Moderate respiratory distress
      ◦ BS clear and equal, good air entry – slightly decreased in bases
      ◦ Mild IC and SC retractions
      ◦ Intermittent grunting

Case 1
Physical Examination

Cardiovascular

- Heart rate and rhythm regular with no murmur noted
- Heart rate ranging 170-190 bpm
- Central pulses palpable, weak
- Peripheral pulses not palpable
- Capillary refill 6 seconds
- Skin cool to touch
• Physical Examination
  ◦ Neurologic
    • Hypotonic
    • Decreased activity
• Labs
  ▪ Baby’s blood type: A positive, negative Coombs
  ▪ Blood culture
  ▪ CBC, differential, platelet count
    ▪ WBC: 25.9
    ▪ Hct: 36.8
    ▪ Segs: 51
    ▪ Lymph: 41
    ▪ Platelet count: 288K
  ▪ Bedside glucose: 62
  ▪ ABG: 7.22/33/94/13.2/-13.3
Case 1
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Initial care
  ◦ HFNC placed
  ◦ PIV attempts prior to team’s arrival unsuccessful
  ◦ UAC placed
  ◦ NS boluses x 2
  ◦ Transferred to higher level of care
• Clinical progression
  ◦ Initial hyperglycemia – managed with a decrease in the GIR
  ◦ Hct on DOL #2: 29.3%
  ◦ Feeds started on DOL #2
  ◦ Hct on DOL #3: 26.5%
  ◦ Phototherapy x 1 day – maximum bilirubin 12.5 on DOL #3
  ◦ Hct on DOL #4: 32.2%
  ◦ HUS within normal limits
  ◦ Blood culture no growth
  ◦ Discharged home on DOL #7
Causes of Hypovolemia

- Congenital anemia
- Twin-to-twin transfusion
- Chronic abruption
- Acute abruption with a normal hematocrit
- Nuchal cord
- Prolapsed cord
- Cord accident
• ~ 25% of births
• Symptomatic versus asymptomatic
• Dynamic in nature
• Occurrence increased with gestational age and with longer cord length
• Mean length is 60 cm (~23.5 inches)
How can a nuchal cord cause hypovolemia?
Anatomy of an Umbilical Cord
• FHR variable decelerations
• Net transfer of blood from the fetus to the placenta
• Increased effect with decreased recovery time between contractions
• Potential compromised neonatal status due to hypoxia/reduced blood volume
Also consider....effects compounded by:

- Oligohydramnios
- Multiple nuchal cord loops
• ABC’s of resuscitation – airway, airway, airway
• Current emphasis on first breath cascade
• Role blood volume plays in transition
• Perfusion of capillary bed of lung alveoli
• Requires ~ 40 ml of blood to achieve expansion/recruitment of alveolar capillary bed
• Generates hydrostatic exoskeleton to maintain alveolar expansion
• Provides higher osmotic pressure to clear lung fluid from alveoli

Blood Volume Model in Neonatal Transition
Current increased practice of delayed cord clamping

Potential benefits:
- Increased iron in infants ~ months of age
- Additional blood volume to the baby ~60 ml
- Supports the infant during transition to breathing
- Replenishes lost blood and allows for volume/acid-base correction
Possible Effects of a Nuchal Cord

- Anemia
- Pallor
- Hypotension
- Hypovolemic shock
- Hypoxic-ischemic encephalopathy
- Cerebral palsy
The babies who might benefit most from a delayed cord clamping are the very ones whose cord may well be ligated prior to delivery.
Management of a Nuchal Cord

- Personal preference of health care provider
- Reduce cord from around neck
- Push cord over shoulders and deliver baby through the cord
- Ligate the nuchal cord prior to delivery
- Somersault maneuver
Somersault Maneuver
• Background
  ◦ Term infant
  ◦ Mother is a 29 year old, G3 P2
  ◦ Uncomplicated pregnancy and labor
  ◦ SVD
  ◦ Apgars 8 at 1 minute, 9 at 5 minutes
• Physical Examination
  ◦ Abnormality noted immediately after delivery
Case 2
Case 2

- Congenital Eversion of the Eyelids
  - First described by Adams in 1896
  - Double Congenital Ectropion
  - Rare condition, incidence unknown
  - Usually bilateral
  - More frequently noted in AA infants
  - In Caucasian infants, associated with Trisomy 21 or collodion skin diseases
  - Unknown etiology
Case 2

Mechanism of Action
- Orbicularis spasm
- Conjunctival edema
- Protection of cornea
• Treatment
  ◦ Usually resolves spontaneously with conservative treatment
  ◦ May require surgical intervention
  ◦ Treatment includes lubrication, antibiotic ointment, eye patching
  ◦ Early treatment important to prevent secondary infections, amblyopia, and epidermization of the conjunctiva