11 hour-old colt

- History of dystocia
  - Labor approximately two hours
  - Veterinarian arrived
  - Correct the dystocia quickly
- Born at 11:00 a.m.
  - Weak and unable to stand
  - Fed colostrum
  - Treated with DMSO
  - Referred
- Arrived in the front of a stock trailer
  - Very wet, cold, minimally responsive

Case 1

- Physical examination
  - Temperature 95.6 F
  - Ice cold legs, no peripheral pulses
  - Severe entropion with sunken eyes
  - Mucous membranes
    - Pale and muddy
    - Splotchy areas of hyperemia
  - No oral, aural, or scleral hemorrhages
  - Blood pressure low
    - Could not obtain ABG
    - Could not measure BP

Case 1
Admission blood work

Case1

- You decide the foal is in septic shock
- Name 3 findings from PE that support the diagnosis of shock:
- Name 2 laboratory findings that support the diagnosis of sepsis:
- Name 3 things you would do to treat the shock:

Case 1

- After your initial treatment
  - His legs began to warm
- Now you would like to treat the suspected septic origin of the shock.
- Name 2 ways you could do this.

Case 1

- You decide to treat the hypoglycemia
  - By placing the foal on a 10% dextrose solution
  - The foal weighs 111 lbs on admission
- What is a reasonable initial fluid rate
  - Which would deliver enough dextrose to equal what is usual produced by the neonatal liver?
- Would this result in enough fluids to meet maintenance fluid need for this foal?

Case 1

- 111 lbs = 50 kg
- 4 – 8 mg/kg/min
  - 4 mg X 50 kg = 200 mg/min
  - 200 mg/min X 60 min = 12000 mg/hr
  - 10% dextrose = 100 mg/ml
  - 12000 mg/hr / 100mg/ml = 120 ml/hr

Case 1

- 111 lbs = 50 kg
  - 10 kg - 100 ml/kg/day = 1000 ml
  - 10 kg - 50 ml/kg/day = 500 ml
  - 30 kg - 25 ml/kg/day = 750 ml
  - Total/Day = 2250 ml
  - 94 ml/hr

Case 1

- His initial ABG:
  - On INO_2 4 lpm
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Case 1

- By 1:30 a.m. the foal's lungs began to sound moist and his arterial blood gas had deteriorated.

Case 1

- pH = 7.253
- Pco2 = 68
- Po2 = 38
- SAT = 47
- Cont = 8.0
- HCO3 = 30
- BE = 2.2
- INO2 = 10 lpm

Case 1

- The foal was placed on a ventilator with an Fio_2 = 1.0.

Case 1

- pH = 7.196
- Pco2 = 63
- Po2 = 75
- SAT = 87
- Cont = 10.8
- HCO3 = 25
- BE = - 3

Case 1

- The foal was placed on NO at 26 ppm in the inhaled gas.

Case 1

- The foal became hypotensive
  - S43/D22 M26 and HR = 80 bpm
  - Urine production < 10% of that expected
- His hypotension was treated with IV methylene blue
  - Block local NO production
  - NO produces hypotension in septic shock
- Resulted in a transient but dramatic increase in blood pressure
  - S126/D61 M74 and HR = 94
  - Despite this, the foal became anuric. Why?

Case 1

- BP began to fall again within 2 hours
- Developed pulmonary edema
  - Fluid began to appear in the endotracheal tube
- Difficult to measure BP
- Developed progressive abdominal distention
- Despite our intensive efforts
  - Not responding to therapy
  - Euthanized

Case 2

- 17 hour old filly
- Born at 4:00 a.m.
  - 345 days gestation
  - Placenta was normal
  - Delivery was fast
- The foal never suckled the mare
- Contracted left hind fetlock

Case 2

- By 8:00 a.m.
  - Not nursing
  - Able to stand in front but not behind
  - Began to suckle from a bottle but never vigorously
- During the day
  - Foal became weaker
  - Required tube feeding

Case 2

- Arrived down in the van but quite active
- Oral mm were splotchy, muddy
- You decide to place the foal on INO_2
  - Before completing your PE
  - Because of the mucous membranes
- What flow rate of O_2 would you begin on?

Case 2

- After beginning the INO2
  - Oral mm turn pink with large vessel injection
- There are no oral, scleral or aural petechia
- Labored breathing
  - Respiratory rate 48
  - Only mild nostril flare
  - No abnormal lung sounds
- Good borborygmi
- Umbilicus is normal

Case 2

- Temperature of 100.4° F, HR of 78 bpm
- Weighed 111 lbs.
- Thin
- Normal hair coat
- Good ear cartilage development
- No excessive joint laxity
  - Left hind fetlock moderately contracted

Case 2

- Good peripheral pulses
- Feet and ears are warm
- BP 80/43 (51)
- Periods alert and aware
- Periods of deep sleep
- Stands with little assistance
  - < 5 min. supporting herself well
  - Knuckles on left hind fetlock

Case 2

- Initial laboratory analysis:

Case 2

- What does the WBC and fibrinogen tell you?
- How can you tell this problem began *in utero*?
- What does the IgG level tell you?
- Name 2 ways you could try to correct the problem indicated by the IgG level?
- How can you tell if the treatment you chose worked?

Case 2
The next morning

- Foal's attitude improved
- Appeared to be doing well
- You have been giving her intravenous dextrose overnight
  - Now you want to begin enteral feeding
  - No meaningful suckle
- How can you feed her enterally?

Case 2

- Begin with 10% body weight
- How much should you feed the foal every 2 hours to reach this goal?
- How many kcals/kg/day will this provide?
- Name 2 ways you could treat the hind leg fetlock contracture.

Case 2

- First few days of hospital stay
  - Improved attitude and strength
  - Periods of normal activity
  - Very responsive to surroundings
  - No suckle
  - Very active search
  - Only a licking motion with her tongue
  - Never meaningfully suckled

Case 2
Hospital day 4

- WBC
  - Increased to normal range
  - On day 4 decreased to 2,340/µl
- Fibrinogen slowly increased
  - Peak of 479 mg/dl
- Fed 20% of her body weight
- How many kcal/kg/day is she being fed?
- Healthy foals usually gain weight at this level of nutrition. But, there was no weight gain on this level of nutrition. Why not?

Case 2
Hospital day 6

- Gained weight
- Contracture was improving
- She still had no meaningful suckle response
  - She used her tongue quite well

Case 2
Hospital day 8

- Filly nursed off the mare several times
- Appeared to be suckling getting some milk
- Next day
  - She only lick and could not nurse effectively

Case 2
Hospital day 13 - 22

- By hospital Day 13
  - She had perfected the art of sucking on her own tongue
  - She had no tongue curl
  - Not suckle objects
  - Suckle with tongue out the side of mouth
  - Could not coordinate sucking activity
- Hospital Day 18
  - Finally began to nurse off the mare
- Discharged on Hospital Day 22

Case 2

- Many of this foal's signs
  - Can be explained by NE and sepsis
- Name 2 signs consistent with NE
- Name 3 signs consistent with sepsis