

Necrotizing Enterocolitis

*Bugs, Drugs and Things that go
Bump in the Night*



*“From ghoulies to ghosties and
long leggety beasties & things
that go bump in the night, good
lord deliver us”*

Old Cornish Prayer

✓ *“Caring for premature infant with
NEC is like riding a mile-high roller
coaster without brakes. All you can
do is hang on for the ride and watch
out for the bumps.”*

RA Polin 2005

- ✓ *Epidemiology*
- ✓ *Pathophysiology*
- ✓ *Diagnosis*
- ✓ *Management*
- ✓ *Prevention*

The Case Begins

✓ Baby “M” was a *1150 male infant* (27 wk gestation), born to a 26 year old woman. Mrs. “M” admitted to recreational use of *cocaine*. Three days prior to delivery she was given *indomethacin* because of preterm labor.

The case continued

✓ The baby was delivered by emergency cesarean section because of late decelerations. *Apgar scores were 1 & 3* & baby “M” required endotracheal intubation.

The case continued



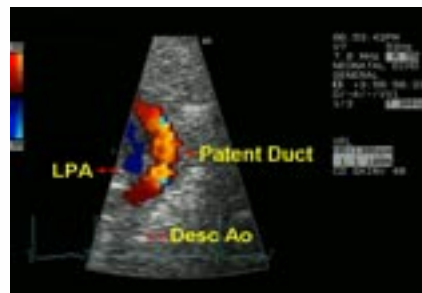
The case continued

✓ Because of worsening respiratory distress, an *umbilical arterial line* was placed at L4. A CBC obtained from the UA was remarkable for a *Hct = 71%*. On day one of life, the infant was placed on TPN.

The case continued

✓ Within 72 hours, *feedings* were begun. The baby was *advanced to full feedings over 3 days*. On day 4 of life, a murmur was heard and an echocardiogram and chest x-ray were obtained. Total fluid intake at that time was *185 ml/kg day*.

The case continued

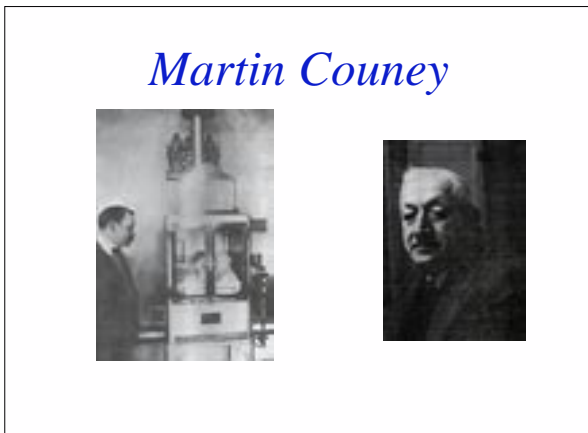
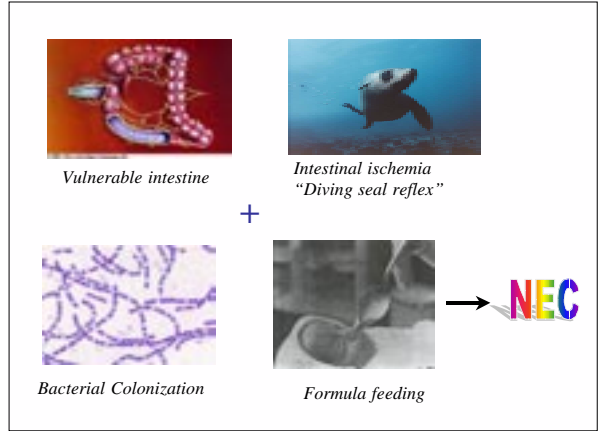


The case continued



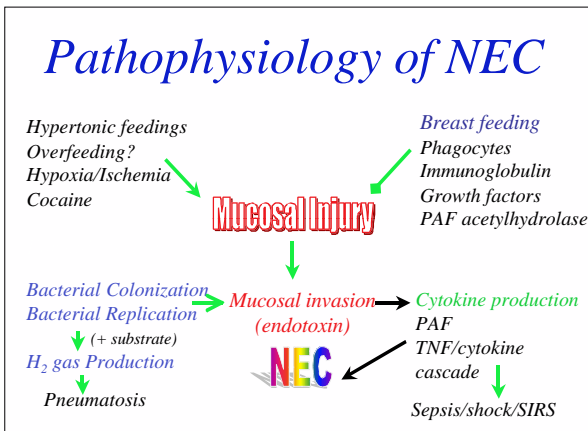
The case continued

✓ On day 10 of life, he needed NaHCO_3 because of a mild metabolic acidosis. Gastric aspirates increased in volume and were blood tinged. A CBC was remarkable for leukopenia and thrombocytopenia. On day 11, he became distended & developed erythema of the abdominal wall.



Epidemiology of NEC

- ✓ Affects 6-8% of VLBW infants
- ✓ Widely varying incidence between centers
- ✓ Incidence inversely related to degree of prematurity
- ✓ No seasonal or sex predilection (? racial effect)



Diagnosis of NEC

- ✓ High index of suspicion based on history and physical findings
- ✓ Early appearances are subtle and easily confused with neonatal sepsis.
 - Apnea (pause in breathing)
 - Bradycardia (slowing of heart rate)
 - lethargy
 - temperature instability

Diagnosis and Staging of NEC

Early gastrointestinal findings may be non-specific

- ✓ Poor motility
- ✓ Blood in stool
- ✓ Vomiting
- ✓ Diarrhea
- ✓ Guarding
- ✓ Distension
- ✓ Feeding intolerance

Diagnosis and Staging of NEC

Later signs reflect progression of illness.

- ✓ Abdominal tenderness
- ✓ Abdominal wall erythema
- ✓ Peritonitis
- ✓ Ascites
- ✓ Palpable mass
- ✓ Hypotension
- ✓ Bleeding disorders
- ✓ Acidosis

Classification of NEC

Stage 1: suspect NEC - signs of sepsis, feeding intolerance \pm bright red blood per rectum

Stage 2: Proven NEC- all of the above, pneumatosis, \pm portal vein gas \pm metabolic acidosis \pm ascites

Stage 3: Advanced NEC- all of the above, clinical instability, definite ascites \pm pneumoperitoneum

How Do You Make the Diagnosis?

Think of the diagnosis!

- ✓ Serial physical examination
- ✓ Laboratory testing
- ✓ Abdominal x-rays

Necrotizing
Enterocolitis

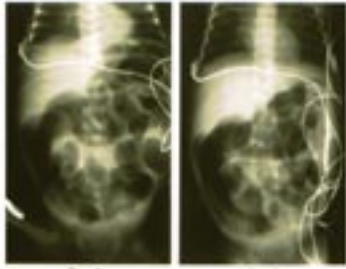
Pneumatosis intestinalis



Necrotizing
Enterocolitis

Portal vein gas





Necrotizing Enterocolitis
Static loops



Necrotizing Enterocolitis
Pneumoperitoneum



Necrotizing Enterocolitis
Pneumoperitoneum
"football" sign



Necrotizing Enterocolitis
Pneumoperitoneum/scrotum

What is the Medical Treatment?

- ✓ Stop the feedings
- ✓ Parenteral antibiotics
- ✓ Nasogastric decompression
- ✓ Parenteral nutrition
- ✓ *Fluid* resuscitation

Firm Indications for Surgical Intervention

- ✓ Perforated viscus
- ✓ Abdominal mass
- ✓ Fixed, dilated loop
- ✓ Positive paracentesis



Necrotizing Enterocolitis
Intestinal gangrene and perforation

What is the outcome?

- ✓ Infants treated medically survival is > 95%
- ✓ Infants requiring surgery survival is 70-75%

How Can NEC be Prevented?

- ✓ Breast feeding
- ✓ Antenatal steroids
- ✓ Cautious advancement of feedings (perhaps)
- ✓ Cohorting during epidemics

Conclusion

- ✓ Prematurity is the single greatest risk factor for NEC & avoidance of premature birth is the best way to prevent NEC
- ✓ The role of feeding in the pathogenesis of NEC is uncertain, but it seems prudent to use breast milk (when available) and advance feedings slowly and cautiously