Cholestasis in Neonatal, Extremely Low Birth Weight Infant

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Background
Male, born 26 4/7 weeks (Term is 40 weeks)
Spontaneous pre-term labor (urgent cesarean)
Birthweight: 0.890 kg
- Extremely low birthweight,
- Appropriate for Gestational age
Admitted to NICU for
- Prematurity
- Possible sepsis
- Respiratory distress
- Apnea

Additional Complication:
Request to avoid blood transfusions by the family for religious reasons

Cholestasis is...
When bile cannot flow from the liver to the duodenum, it can be caused by mechanical or genetic factors.

Long term consequences of untreated cholestasis:
Liver disease
Liver failure
Liver transplant

It is detected by: AST, ALT and Bilirubin laboratory values

Present Assessment
Age: Day of Life 26
Weight: 1.129 kg
Length: 36 cm
Head Circumference: 24 cm
Growth rate_126% of BW

Nutritional support:
PN: 4 g/kg/d protein D14 + IL
Enteral: Breast Milk, 1 ml every 2 hours
Nutrition:
98 Kcal/kg/d
3.8 g/kg/d protein

Labs: See direct bilirubin

Adequate calories and protein for basal needs and growth.
PES Statement:
Inadequate PO intake related to medications as evidenced by patient receiving all nutrition through TPN for 26 days.
At nutritional risk due to ELBW, increased needs, infrequent blood draws, poor gut motility, remaining on TPN.

Monitoring & Evaluation
Maintain caloric/protein intake
Transition to EN
Monitor growth
Check labs
- monitor electrolytes
- TTPNP once per week
- Check nutrition labs in 1 month.

Problems:
This complicated patient had a significant number of problems that were diagnosed during his course of treatment. They are listed here based on their initial diagnosis date and duration.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypotension</td>
<td>DOL 1 – 20</td>
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<tr>
<td>Respiratory Distress</td>
<td>DOL 1 - end of study</td>
</tr>
<tr>
<td>Patent Ductus Arteriosus</td>
<td>2 doses</td>
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<tr>
<td>Adrenocortical Insufficiency</td>
<td>DOL 19</td>
</tr>
</tbody>
</table>

Causes of cholestasis...
Most common causes of cholestasis in neonates are:
- Extrahepatic biliary atresia
- Idiopathic neonatal hepatitis
- Total Parenteral Nutrition-associated (TPN)

Frequency of TPN-associated cholestasis in neonates:
- Ocurs in almost 50% of infants with birth weight < 1 kg
- Often seen after 2 wks of receiving TPN
- Complicated medical course increases incidence

Possible Pathogenesis of cholestasis:
- No enteral feeds
- Excessive calorie load
- Components of PN solutions
- Sepsis

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References:

Image from: http://www.virtual-liver.de/images/liver-illustration.png