HEPATOCHOLECYSTITIS DUE TO Salmonella Dublin IN A CROSSBRED CALF

Ronzoni A.,
Bayrou C., Evrard L., Touati K., Sartelet A.
SALMONELLA DUBLIN

- Gram-, oxidase-, rod-shaped bacterium
- Strain **host-adapted to cattle**
  possible infections in humans and sheep
- Survives **months** in organic matters
  Water, bulk tank, filters, pen mates...
  and up to **6 years** in dried faeces
- Introduction in the herds ➔ movement of infected adults and calves
SALMONELLA DUBLIN

Maintenance in the herd

Active carriers:
Intermittent/constant shedding
milk and faeces

Latent carriers:
lymph nodes
tonsils
liver
spleen
gallbladder

Passive carriers:
acquiring from environment
without tissue invasion
S. DUBLIN Oral infection

Peracute

Young calves

Acute Enteritis ++

Calves >2mo

Strain virulence Immunity Age Host

Septicemia Endotoxic shock

Polyarthritis

Meningo encephalitis

DEATH

Pneumonia
S. DUBLIN
Oral infection

Adults

PERACUTE

Strain virulence Immunity Age Host

ASYMPTOMATIC ++

ACUTE ENTERITIS

DEATH

ABORTION (140<d<270)
Age class distribution of Salmonella Dublin cases in a cohort of 45 animals (2012-2013)

(Schefers, 2013)
CASE HISTORY

- Crossbred Belgian Blue calf
- 2 month-old
- Female
- 90 kg
- Anorexia since 2 days
- Suspicion of digestive problem
CLINICAL EXAMINATION

• Weariness
• Dehydration (≈ 8 %)
• ↑ CRT (4’’)
• Severe mucosal jaundice
• Faeces yellow-orange & mucus
SPECIAL EXAMINATION

- Supple abdomen
- “Drop-sound” on both sides
- Right side:⬇ bowel sounds
- Succussion: +
- Paracentesis: -
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Unit</th>
<th>Results</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base excess</td>
<td>mmol/L</td>
<td>-3.9</td>
<td>+2 - +5</td>
</tr>
<tr>
<td>Sodium</td>
<td>mmol/L</td>
<td>129</td>
<td>132 - 152</td>
</tr>
<tr>
<td>Potassium</td>
<td>mmol/L</td>
<td>5.1</td>
<td>3.9 - 5.8</td>
</tr>
<tr>
<td>Chloride</td>
<td>mmol/L</td>
<td>99</td>
<td>95 - 110</td>
</tr>
<tr>
<td>Monocytes</td>
<td>10⁹/L</td>
<td>5.15</td>
<td>0.08 - 0.7</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>10⁹/L</td>
<td>23</td>
<td>0.6 - 4.5</td>
</tr>
<tr>
<td>AST - GOT</td>
<td>UI/L</td>
<td>183</td>
<td>70 - 130</td>
</tr>
<tr>
<td>Gamma-GT</td>
<td>UI/L</td>
<td>179</td>
<td>14 - 24</td>
</tr>
<tr>
<td>Bile salts</td>
<td>µmol/L</td>
<td>648</td>
<td>9 - 68</td>
</tr>
<tr>
<td>Conjugated bil.</td>
<td>mg/L</td>
<td>13</td>
<td>0.4 - 4.4</td>
</tr>
<tr>
<td>Total. bilirubine</td>
<td>mg/L</td>
<td>115</td>
<td>0.1 - 10</td>
</tr>
</tbody>
</table>

**HEPATIC and POST-HEPATIC JAUNDICE**
DIAGNOSTIC IMAGING : US

Hyperechoic liver

Dilatation intrahepatic biliary ducts
Distension of gallbladder → Cholestasis

NO evidence of GALLSTONES
DIAGNOSIS

ACALCULOUS HEPATOCHOLECYSTITIS

Symptomatic treatment:
- IV fluidotherapy
- Broad-spectrum ab
- NSAIDs
- Hepatoprotectors

DEATH 24h AFTER ADMISSION
NECROPSY
NECROPSY & HISTOPATHOLOGY
NECROPSY & HISTOPATHOLOGY
NECROPSY & HISTOPATHOLOGY
BACTERIOLOGICAL EXAMINATION

Salmonella enteriditis serovar Dublin
BACTERIOLOGICAL EXAMINATION

DIAGNOSIS

ACUTE ACALCULOUS HEPATOCHOLECYSTITIS

Spread of *S. Dublin* to hepato-biliary system via hematogenic pathway
ACUTE ACALCULOUS CHOLECYSTITIS

- In humans:
  - 10% of acute cholecystitis
  - If no treatment or late diagnosis
    risk of gangrenous or perforation
    30-80% mortality rate
  - Multifactorial
    following systemic infection
ACUTE ACALCULOUS CHOLECYSTITIS

• In humans:
  ✓ Diagnosis based on **clinical symptoms**
    epigastric and right hypochondria pain
    anorexia
    nausea, vomiting
    fever
    leucocytosis
    abnormal liver enzymes
  ...and confirmed by **diagnostic imaging**
  ✓ **Medical approach**
    iv fluids, NSAIDs
    3-6w large spectrum AB

  **Surgery**
    cholecystectomy
    cholecystotomy
ACUTE ACALCULOUS CHOLECYSTITIS

• In cattle:
  ✓ Rare disease ➔ few bibliography
  ✓ Not all clinical signs ➔ nausea, vomiting
  ✓ Difficult to localize pain

• In our case:
  ✓ **Herd level**
    ABORTION due to *Salmonella*
    Suspicion of **water contamination**
  ✓ Rapid diagnostic and treatment ➔ FAILURE
Thank you for your attention!