



8th Symposium ECBHM, 28-30 August 2013, Bern, Switzerland



HEPATOCHOLECYSTITIS DUE TO *Salmonella Dublin* IN A CROSSBRED CALF

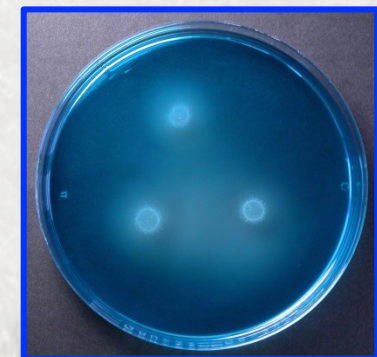
Ronzoni A.,
Bayrou C., Evrard L., Touati K., Sartelet A.





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:

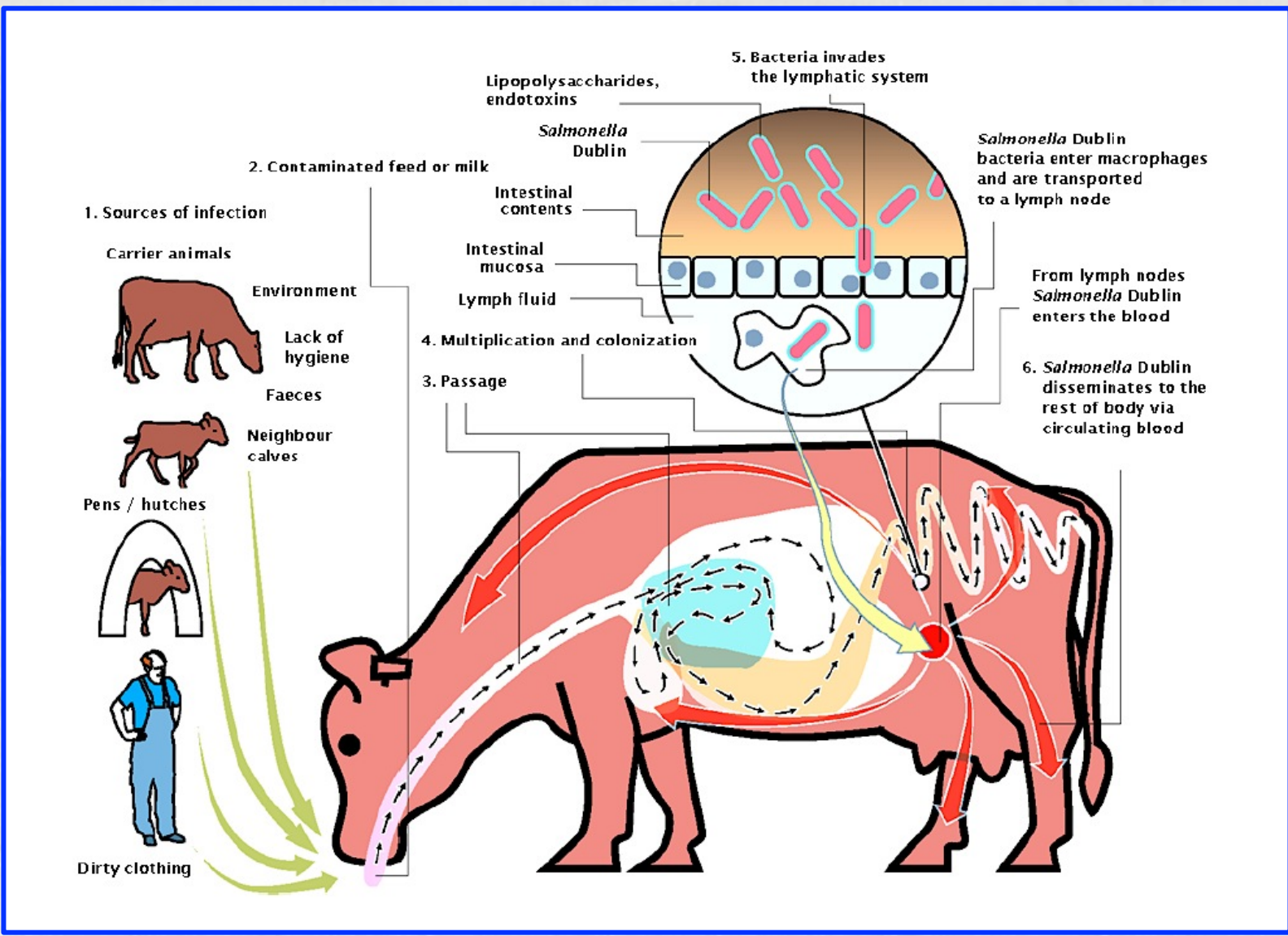
lymph nodes
tonsils
liver
spleen
gallbladder

Passive carriers:

acquiring from
environment
without tissue
invasion



SALMONELLA DUBLIN





S. DUBLIN
Oral infection

Young calves

Calves
>2mo

Strain
virulence
Immunity
Age
Host

PERACUTE

ACUTE ENTERITIS
++

Septicemia
Endotoxic
shock

Meningo
encephalitis

Polyarthritis

Pneumonia

DEATH



S. DUBLIN
Oral infection

Adults

PERACUTE

DEATH

Strain
virulence
Immunity
Age
Host

ASYMPTOMATIC
++

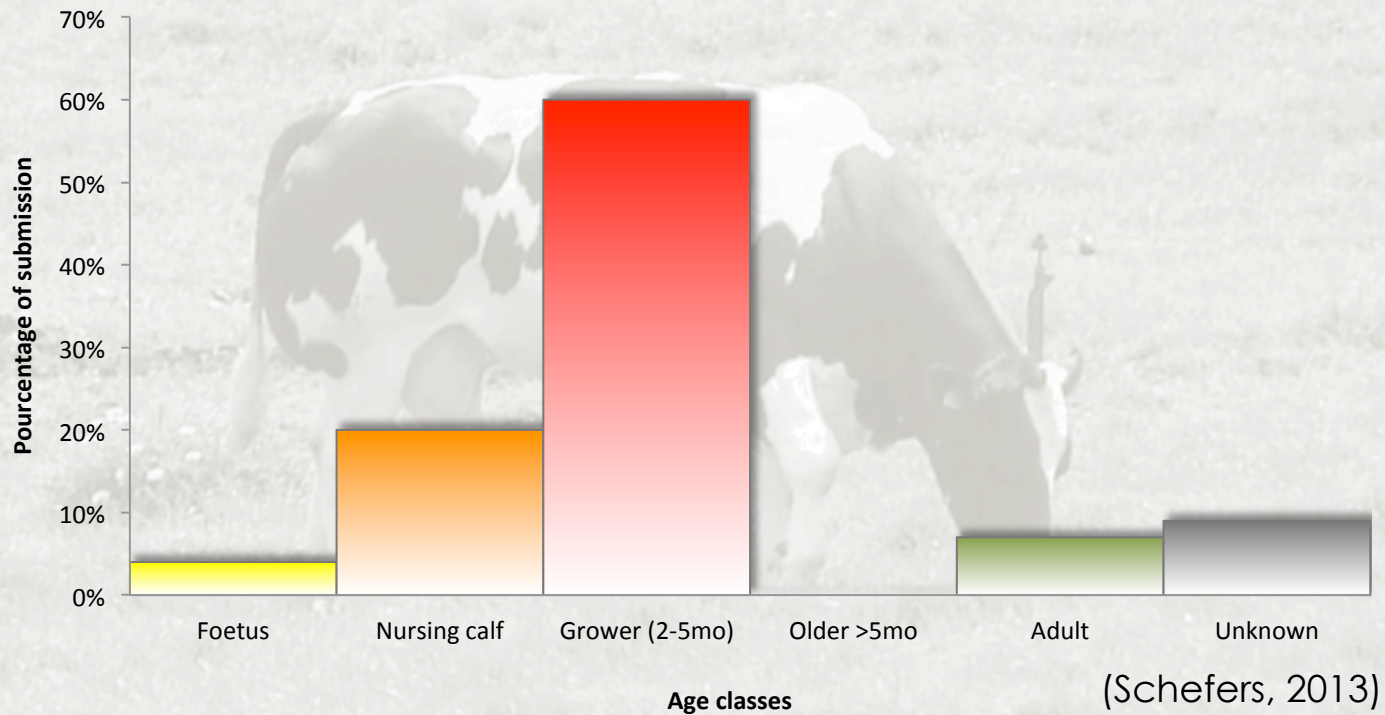
ACUTE ENTERITIS

ABORTION
(140<d<270)



SALMONELLA DUBLIN

Age class distribution of Salmonella Dublin cases in a cohort of 45 animals (2012-2013)





CASE HISTORY

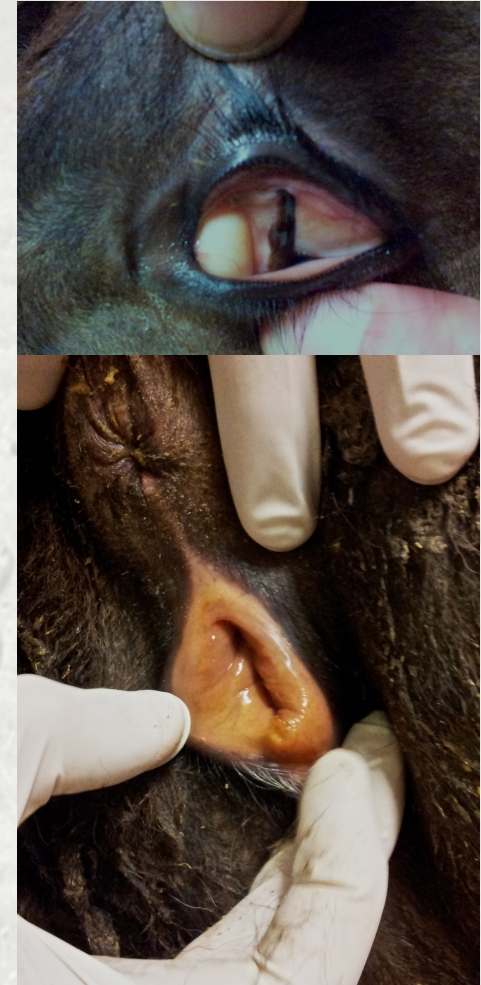
- Crossbred Belgian Blue calf
- 2 month-old
- Female
- 90 kg
- Anorexia since 2 days
- Suspicion of digestive problem





CLINICAL EXAMINATION

- Weariness
- Dehydration ($\approx 8\%$)
- \uparrow CRT (4'')
- Severe mucosal **jaundice**
- Faeces **yellow-orange** & mucus





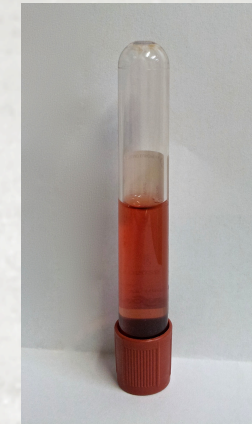
SPECIAL EXAMINATION

- Supple abdomen
- “**Drop-sound**” on both sides
- Right side : ↓ bowel sounds
- **Succussion: +**
- Paracentesis: -



BIOCHEMISTRY & HAEMATOTOLOGY

Parameters	Unit	Results	Range
Base excess	mmol/L	-3.9	+2 - +5
Sodium	mmol/L	129	132 - 152
Potassium	mmol/L	5.1	3.9 - 5.8
Chloride	mmol/L	99	95 - 110
Monocytes	10 ⁹ /L	5.15	0.08 - 0.7
Neutrophils	10 ⁹ /L	23	0.6 - 4.5
AST - GOT	UI/L	183	70 - 130
Gamma-GT	UI/L	179	14 - 24
Bile salts	μmol/L	648	9 - 68
Conjugated bil.	mg/L	13	0.4 - 4.4
Total. bilirubine	mg/L	115	0.1 - 10



SERUM



PLASMA



URINE

➔ HEPATIC and POST-HEPATIC JAUNDICE

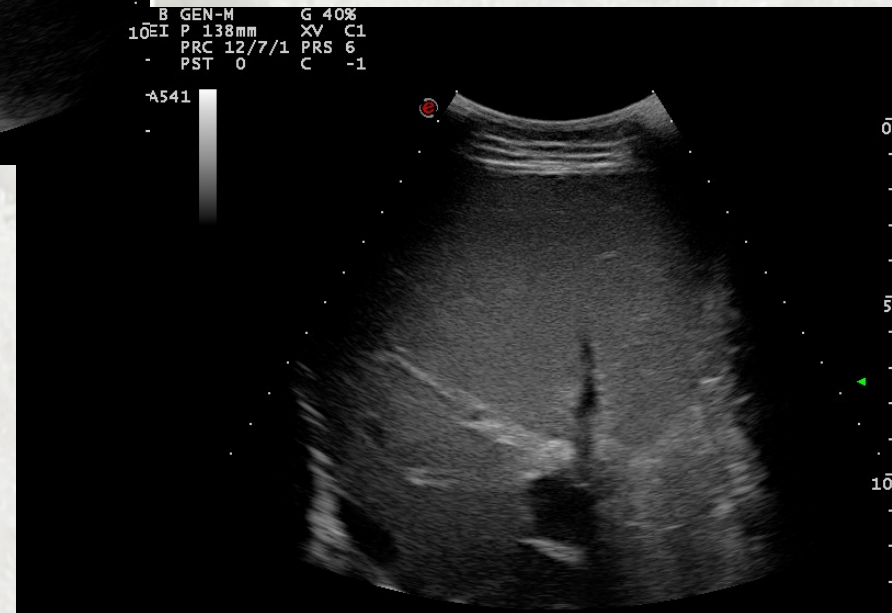


DIAGNOSTIC IMAGING : US



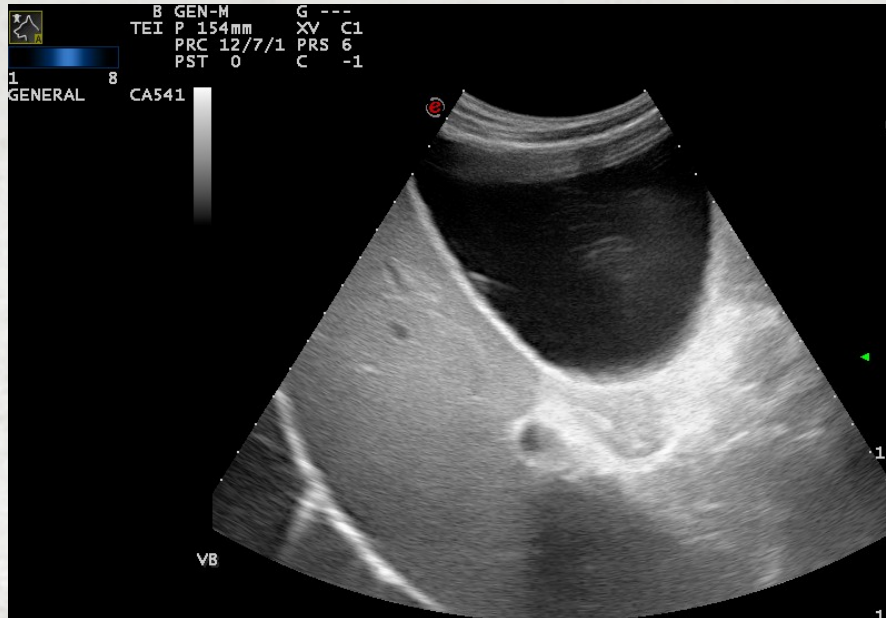
Hyperechoic
liver

Dilatation
intrahepatic
biliary ducts





DIAGNOSTIC IMAGING : US

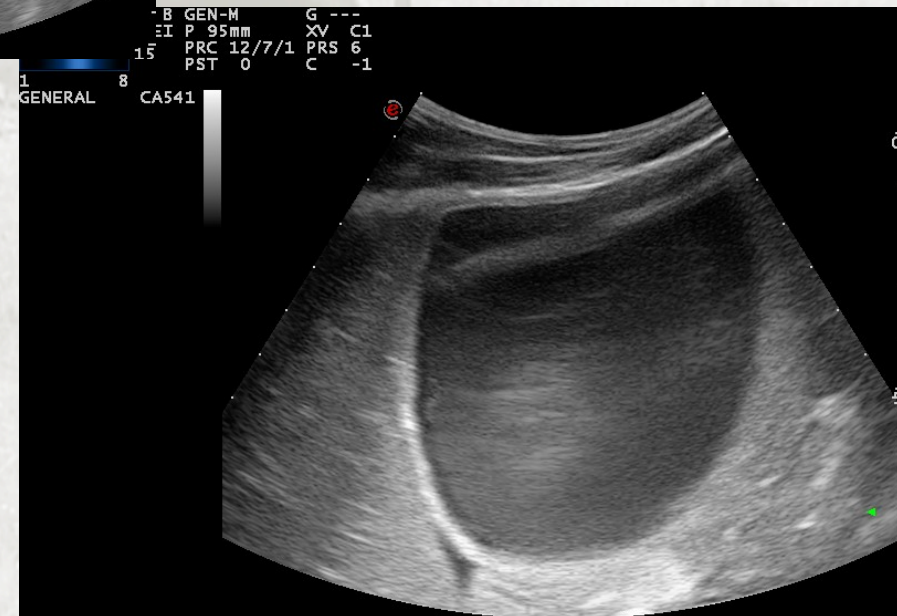


Distension of
gallbladder



Cholestasis

NO evidence
of
GALLSTONES





DIAGNOSIS

ACALCULOUS HEPATOCHOLECYSTITIS

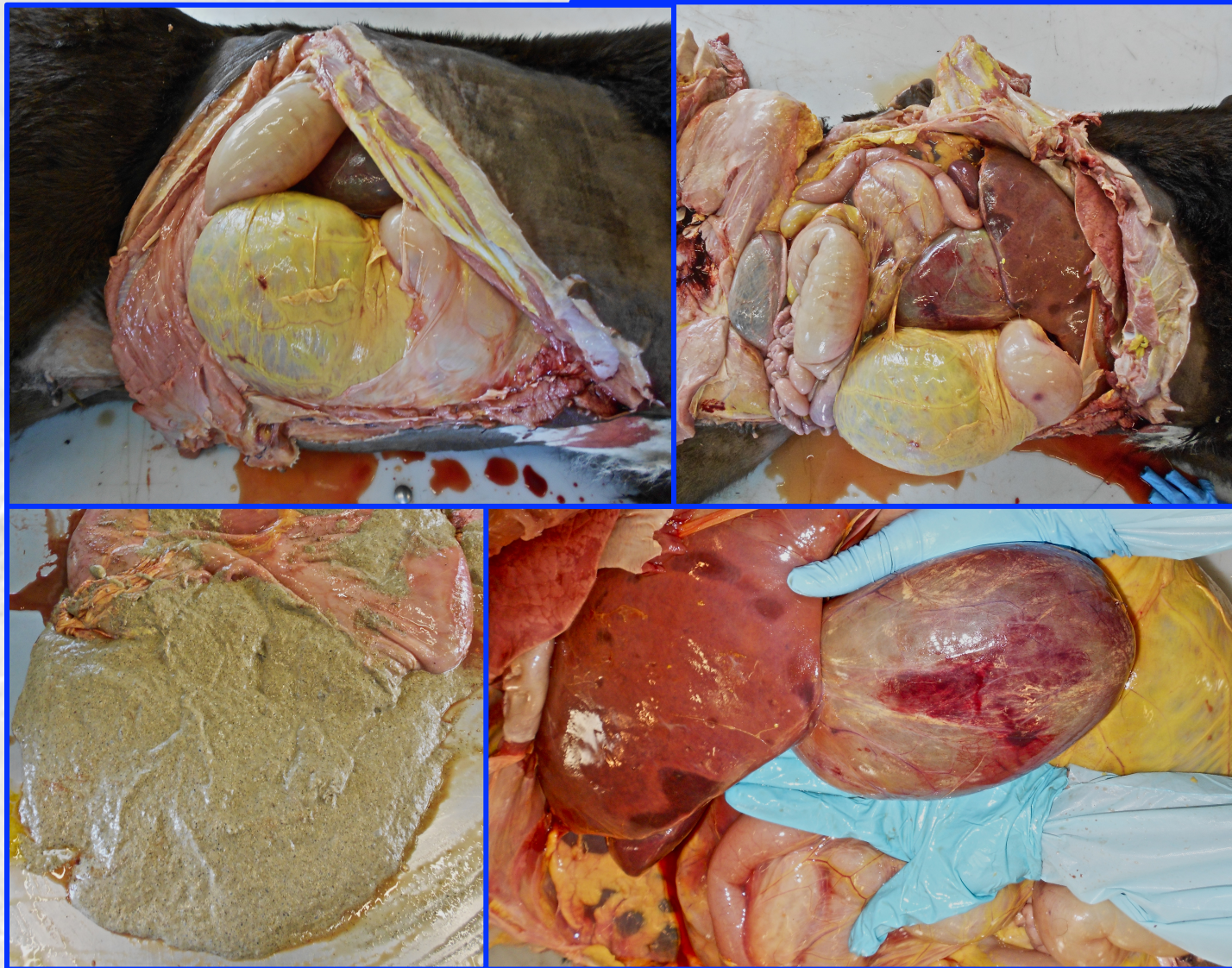


Symptomatic treatment:

IV fluidotherapy
Broad-spectrum ab
NSAIDs
Hepatoprotectors

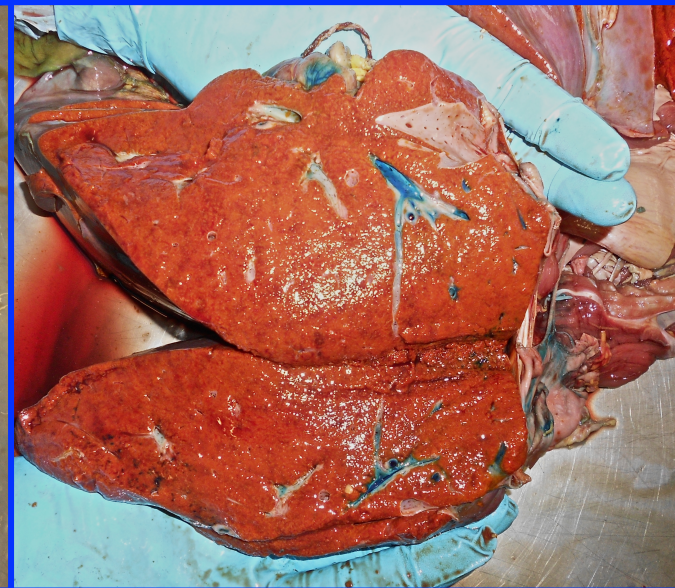
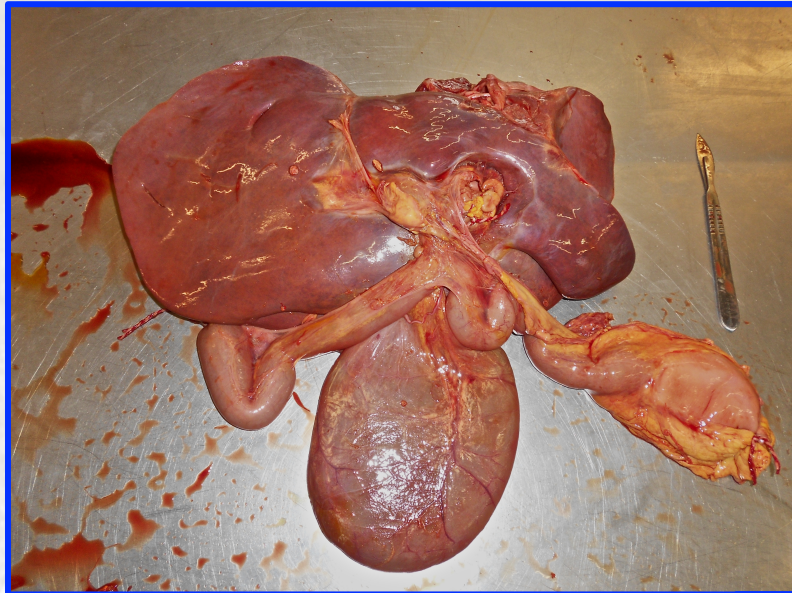
DEATH 24h AFTER ADMISSION

NECROPSY



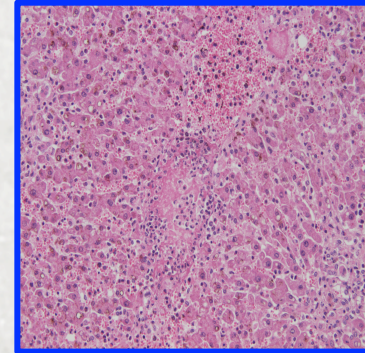
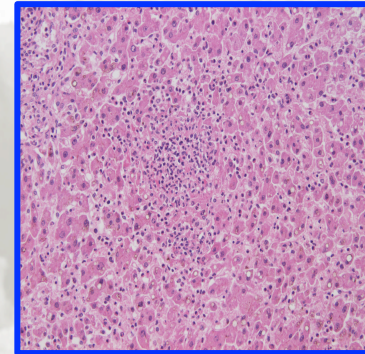
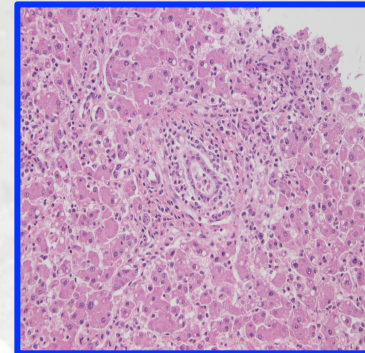
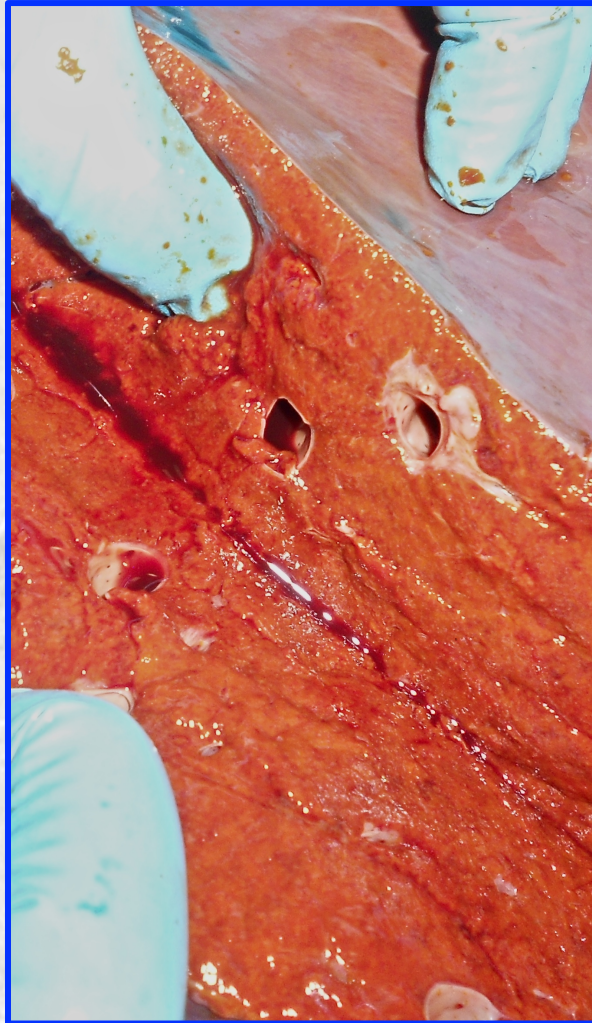


NECROPSY



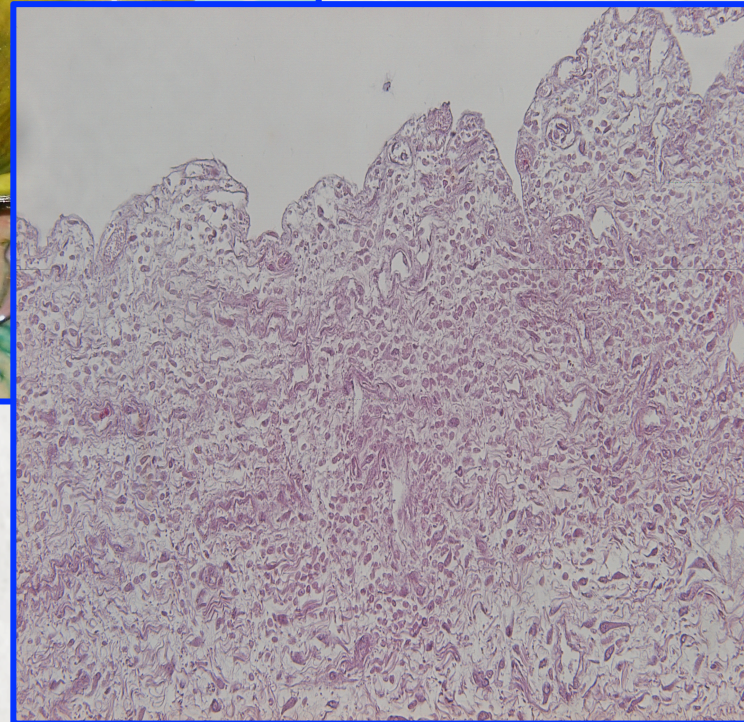
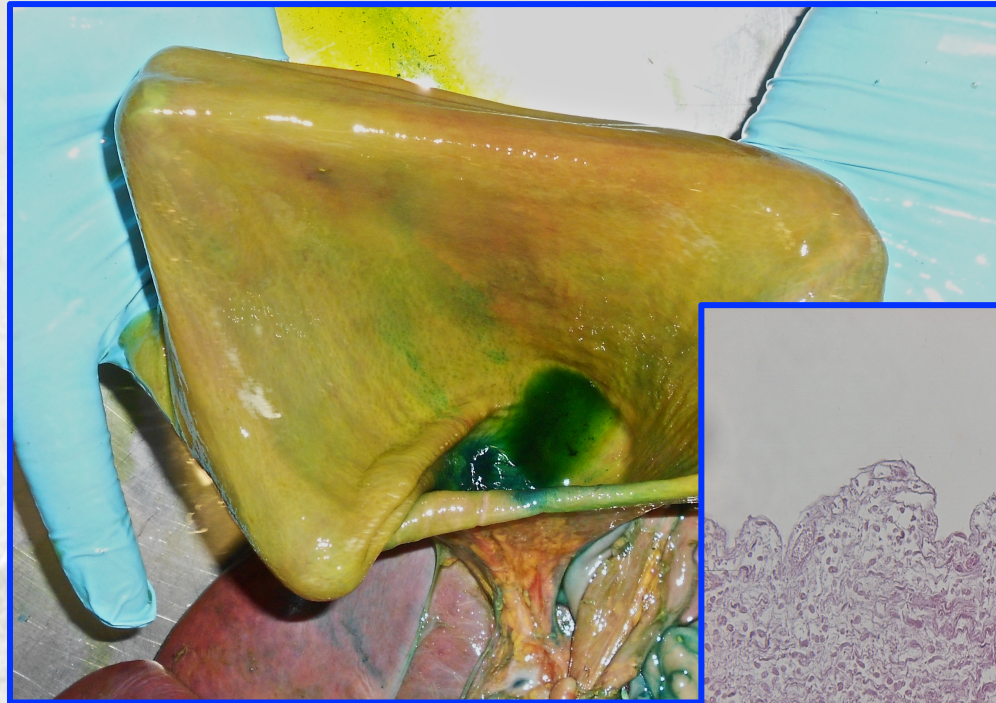


NECROPSY & HISTOPATHOLOGY



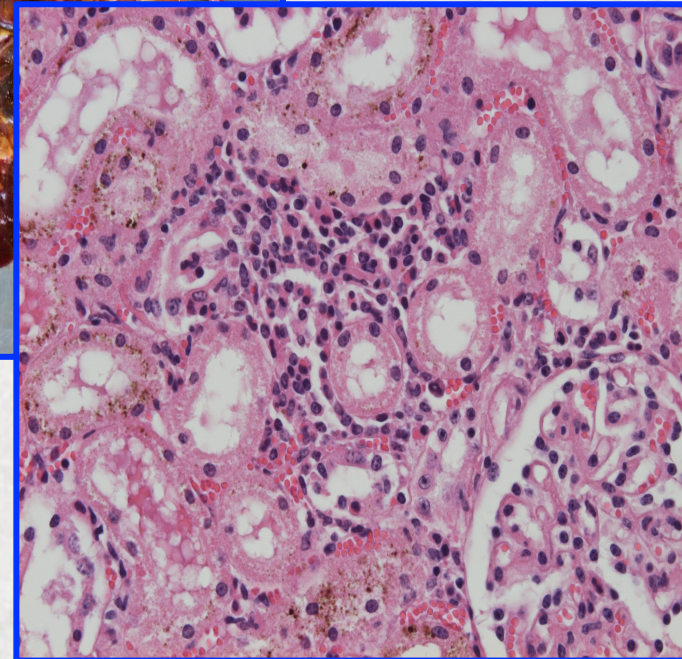
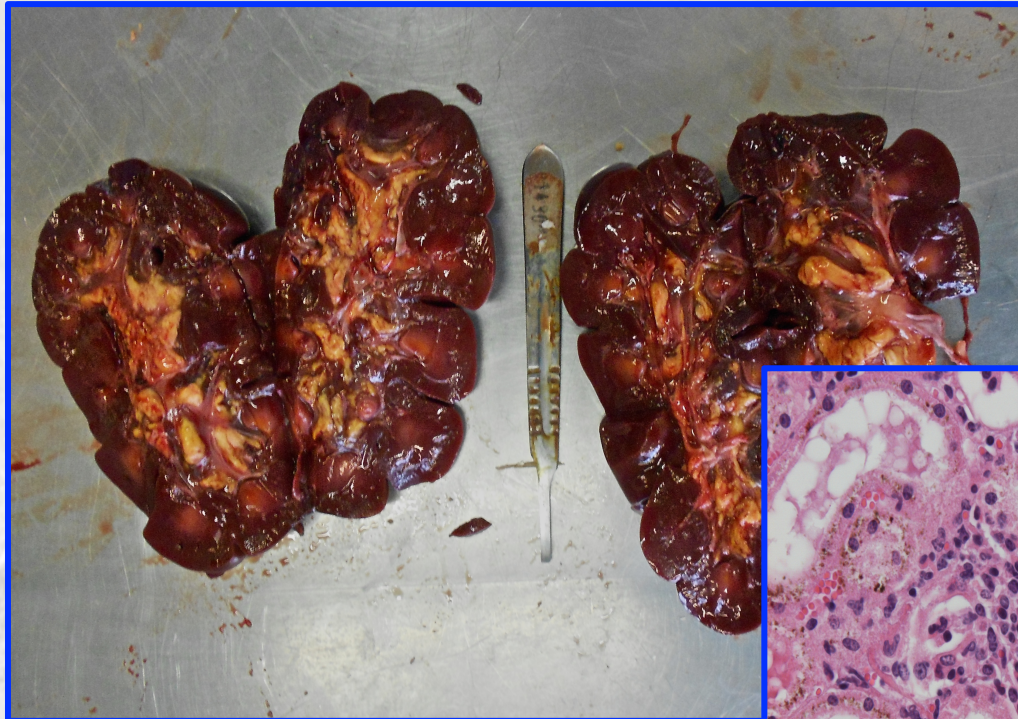


NECROPSY & HISTOPATHOLOGY



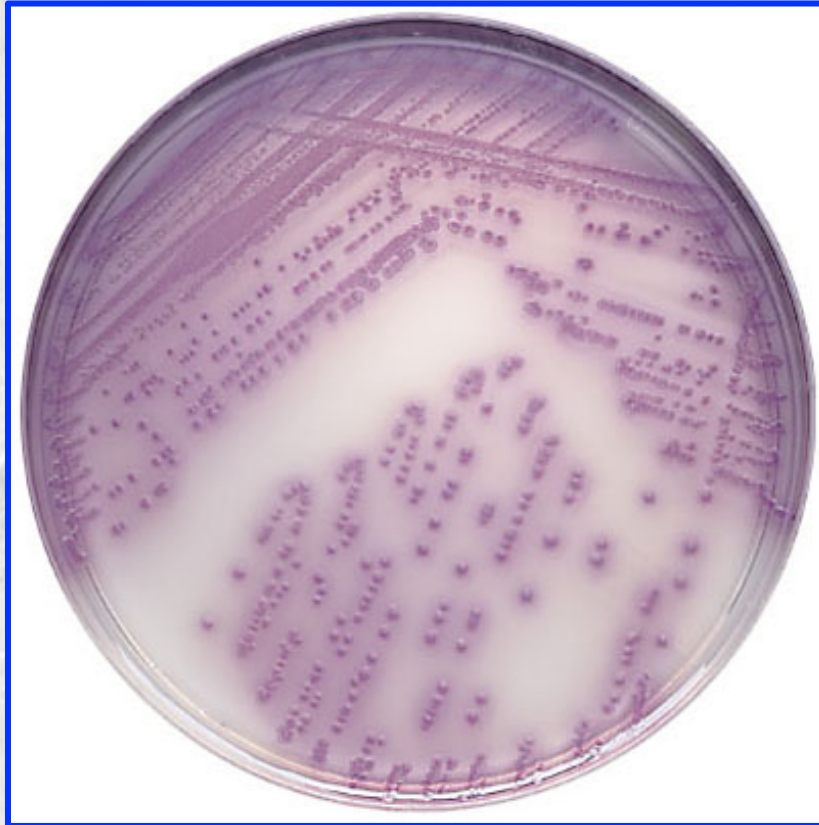


NECROPSY & HISTOPATHOLOGY





BACTERIOLOGICAL EXAMINATION



***Salmonella
enteritidis
serovar
Dublin***



BACTERIOLOGICAL EXAMINATION

DIAGNOSIS

ACUTE ACALCULOUS HEPATOCHOLECYSTITIS



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

Shigella
flexneri
serovar
Dublin



ACUTE ACALCULOUS CHOLECYSTITIS

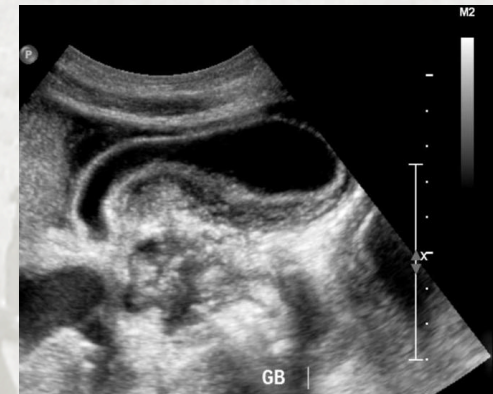
- In humans:
 - ✓ 10 % of acute cholecystitis
 - ✓ If no treatment or late diagnosis
 - ↓
 - risk of gangrenous or perforation
 - 30-80 % mortality rate**
 - ✓ Multifactorial
 - following systemic infection



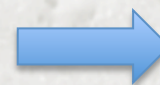


ACUTE ACALCULOUS CHOLECYSTITIS

- 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**



Surgery

iv fluids, NSAIDs
3-6w large spectrum AB

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!

