

CLOSTRIDIUM PERFRINGENS SEPSIS OUTBREAK IN SELENIUM DEPRIVED CALVES

Pas, M.L.¹, Vermijlen, J.^{1,2}, Clinquart, J.¹, Coppens, J.¹, Pardon, B.¹

¹Department of Internal Medicine, Reproduction and Population Medicine, Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium

²Rubovet, Nachtegaalstraat 15, 7782 Komen-Waasten, Belgium

Introduction

Clostridium perfringens is a well-known cause of highly fatal diseases in cattle, of which necro-hemorrhagic enteritis (enterotoxaemia) is best known.

C. perfringens sepsis is a rare condition, described in humans.

Case presentation

- Four calves presented at the Large Animal Internal Medicine Clinic
- Belgian Blue, ±4 months
- Nearly all calves affected on farm (incl. Holstein Friesian cattle)
- Clinical signs on farm: bloody diarrhea, acute mortality, hyperexcitation
- Previous therapy: antimicrobials and vitamins (B1, A, D, E)

Materials & methods

The following exams were executed in each calf:

- Clinical examination
- Ultrasound
- Blood-gas analysis
- Blood smears (Hemacolor)

Depending on severity of clinical signs, additional sampling:

- Hematological
- Biochemical analysis
- Hemoculture

Laboratory analysis

	Calf A	Calf B	Calf C	Calf D	Ref.
pH	7.056	7.165	7.113	7.406	7.35-7.45
Lactate mmol/L	22.6	23.7	17.9	2	<2
Base excess (mmol/L)	-18	-18	-19.4	-1.3	-5 to +5
Creatinine (μmol/l)	247	235	182		44-141
CK (IU/L)	1512				0-110
AST (IU/L)	173	487	184		50-150
GGT (IU/L)		416	27		0-87
Total bilirubin (μmol/l)		<2	3		0-12
Mg blood (mmol/l)		0.93	0.71		0.75-1.25
Mg urine (mmol/l)		1.8			0.53-1
Blood smear	Left shift + neutrophils with basophilic cytoplasm and Döhle bodies				

Conclusion

To the authors knowledge, this is the first report of *C. perfringens* sepsis in a herd outbreak with nervous signs in calves. Whether the high lactate was caused by muscle damage, paving the way for an opportunistic *C. perfringens*, or whether the *C. perfringens* primarily created an anaerobic metabolism, resulting in hyperlactatemia, remains to be determined.

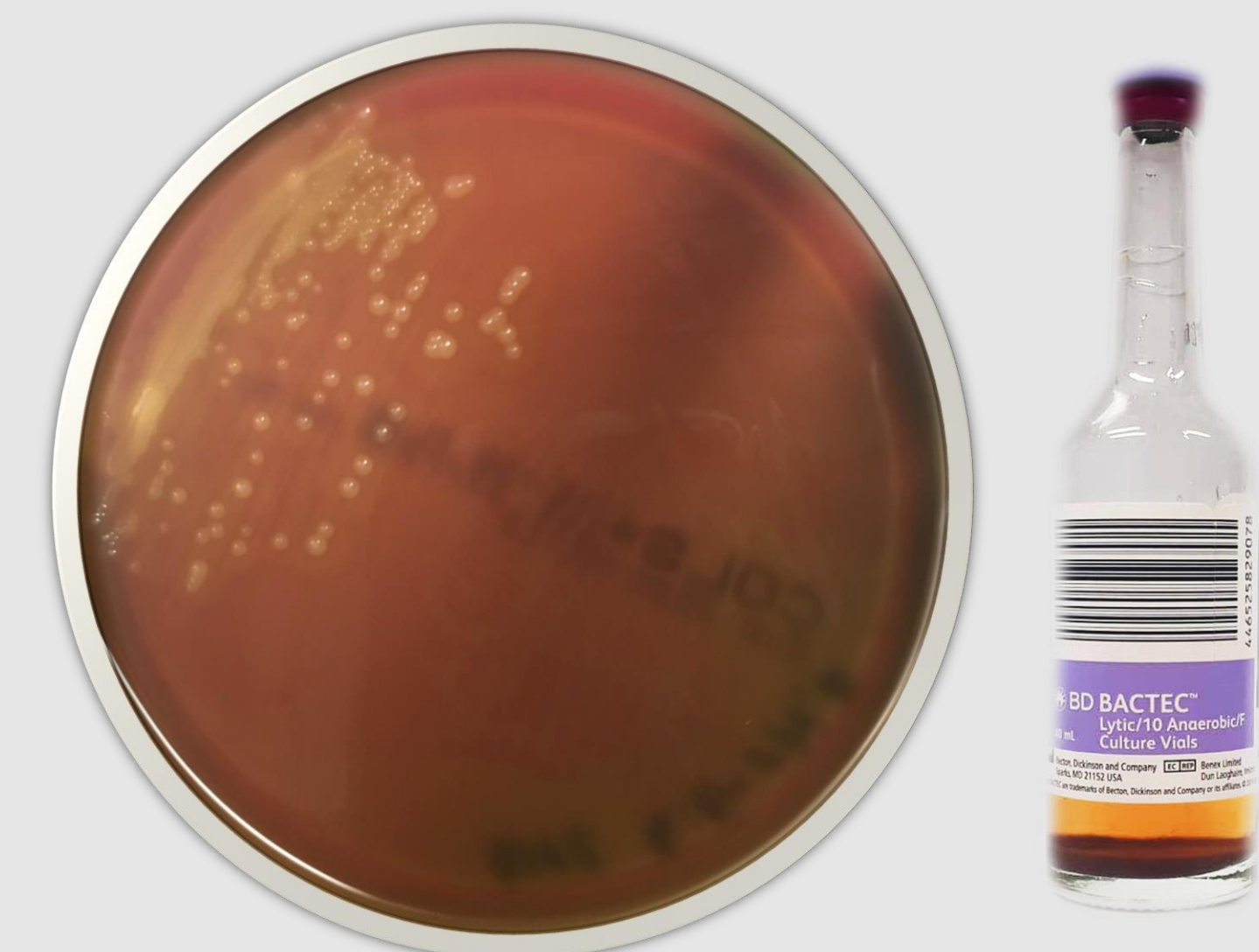


Figure 1: Pure culture of *Clostridium perfringens* isolated out of enrichment blood culture media, acquired from a calf with nervous signs in a herd health outbreak.

Results

Clinical exam:

- Hyperthermia (39.2-39.4°C)
- Tachypnea (45-84 bpm)
- Tachycardia (116-480 bpm)
- Fecal consistency normal, reduced
- Excitation and muscle twitches
- No signs of dehydration

Ultrasound:

- Few pleural B-lines
- Enlarged liver (calf B)
- Mild abomasitis (calf B)



Figure 2: Calf B was most affected and was in lateral decubitus, had scleral vessel injections and congested mucosa.

Blood results: Table 1

Hemoculture

- C. perfringens* isolated out of anaerobe hemoculture (Fig. 1)

Other results:

- Selenium of 4 other calves (same box on farm) too low (17.8-44.4 μg/l)

Case outcome

The calves were treated with (intravenous) sodium penicillin, ketoprofen, vitamin B1, vitamin E-selenium, and infusion therapy. All four animals returned home after 12 days.

Contact

Mathilde.Pas@ugent.be
+32 9 264 73 23

