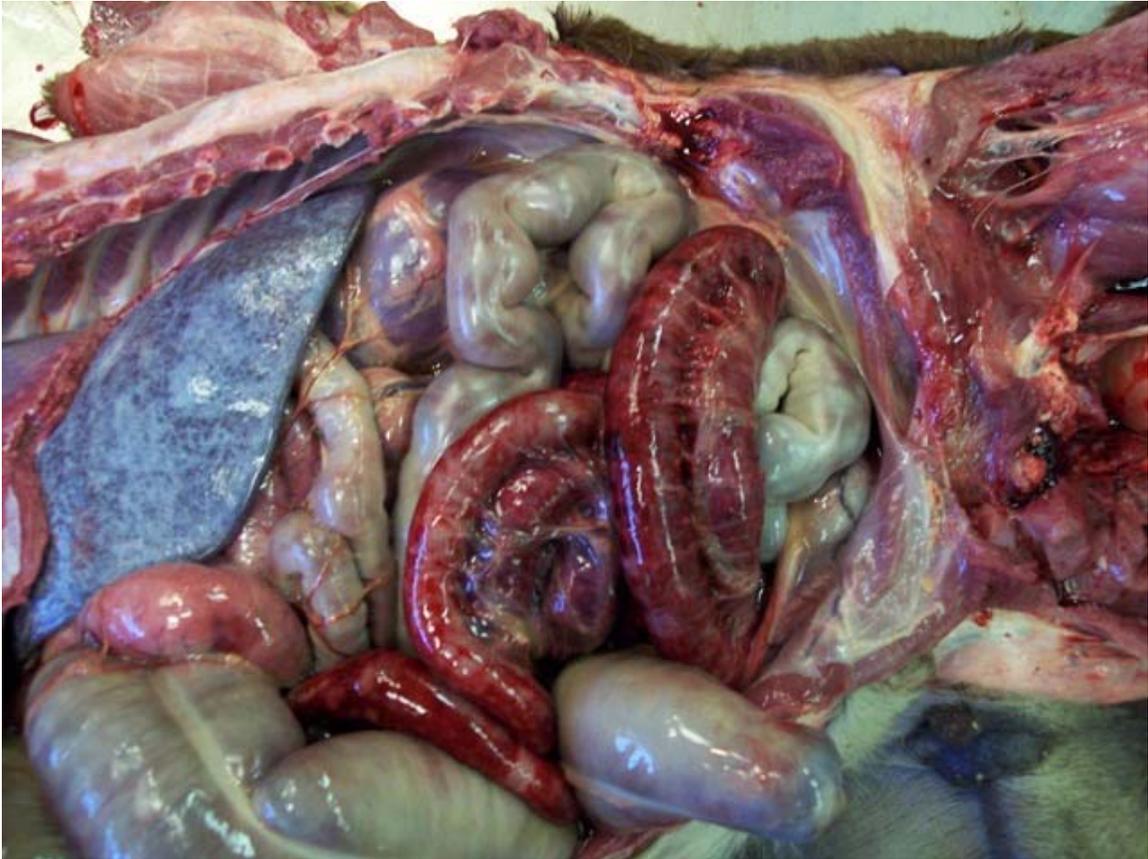
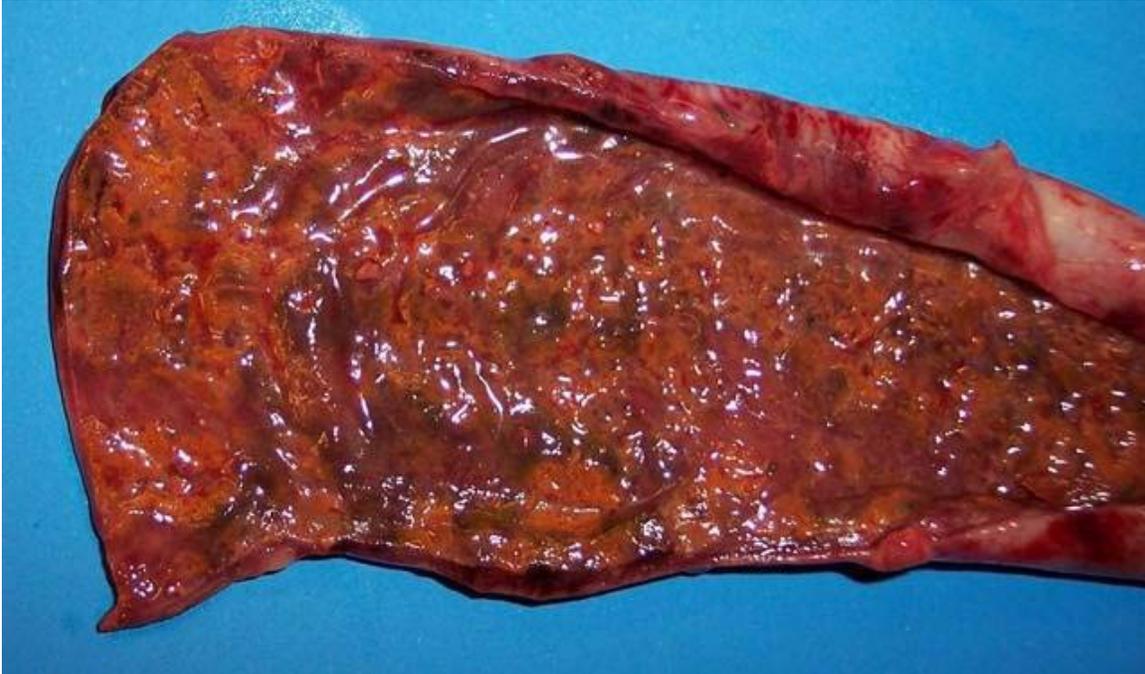


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History:

Two-day-old foal. Severe hemorrhagic diarrhea and colic of 24 hr duration causing death.





Please provide:

1. Description: the small intestine (jejunum and ileum) shows diffusely dark red serosa with a few darker and paler irregular foci. The mucosa (the segment showed in the second photograph is jejunum but there is no way to tell from the picture) shows multifocal to coalescing areas of orange discoloration (interpreted as pseudomembrane) and multifocal smaller and sunken red areas (interpreted as ulcers). The wall of the intestine is diffusely thickened (see at the bottom part of the second photo)

2. Morphologic diagnosis: enteritis, necrotizing, pseudomembranous and ulcerative, multifocal to coalescing

3. Most likely cause/s:

a-*C. perfringens* type C

b-*C. difficile*

c-*Salmonella* spp.

In this case, the etiology was *C. perfringens* type C. The diagnosis was confirmed by detection of beta toxin and by isolation of *C. perfringens* type C from intestinal content. The disease is mediated by beta toxin, a trypsin-sensitive and highly necrotizing toxin that produces intestinal necrosis but it is also absorbed into the systemic circulation and acts in distant organs, including the brain. This infection occurs predominantly in new born foals (and other animals) because during the first few days of life the colostrum has

an inhibitory effect over intestinal trypsin (this is a mechanism to protect the immunoglobulins present in the colostrum)

4-Steps you would follow to confirm/rule out possible causes

a-C. perfringens type C

a.1-C. perfringens beta toxin detection in intestinal content. Detection of this toxin in the intestine associated with necrotizing enteritis in a newborn foal is diagnostic for C. perfringens type C.

a.2-Anaerobic culture of intestinal content and typing of any C. perfringens isolates. C. perfringens type C isolation (even in absence of beta toxin detection) is highly suggestive of C. perfringens type C enteritis, since this microorganism is very rarely isolated from the intestine of normal foals. This is an important consideration because beta toxin is very sensitive to the action of trypsin and other intestinal proteases, and in some cases it may get broken down before the sample is processed for toxin detection.

b-C. difficile

a.1-Detection of C. difficile toxin A or B or both in intestinal content.

a.2-Culture of C. difficile in intestinal content (special media required). This is considered diagnostic (even in the absence of C. difficile toxin/s detection) because foals are not considered to be healthy carriers of this microorganism.

c-Salmonella spp.

Culture or PCR, followed by serogrouping and, if possible, serotyping (note: for serogrouping and serotyping, culture is needed; so if Salmonella is detected by PCR, culture should follow in order to have an isolate for serogrouping/serotyping).