Associations between intestinal lesions and detection of Clostridium perfringens type A or beta-2 toxin in neonatal piglets with diarrhoea

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Associations between intestinal lesions and detection of *Clostridium perfringens* type A or beta-2 toxin in neonatal piglets with diarrhoea

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**Objective:** To evaluate associations between gross and histopathological lesions and the presence of *Clostridium perfringens* type A (*CpA*) and beta-2 toxin in piglets from 4 herds with outbreaks of diarrhoea.

**Methods:** Pathological examinations on 51 diarrhoeic piglets aged 3-7 days were carried out. *CpA* was cultured and typed by PCR. A *Clostridium perfringens* spp targeted probe was used for fluorescent in situ hybridization (FISH) and detection of beta-2 toxin in intestinal contents was performed by enzyme-linked immunosorbent assay (ELISA).

**Results:** Piglets without intestinal lesions had a significantly (P < 0.05) higher prevalence of *CpA* and beta-2 toxin (Table 1).

![Fig. 1: Flaccidity of small intestine. The intestine is thin-walled and flaccid throughout its length.](image1)

![Fig. 2: FISH positive ileal mucosa. Double hybridization for Domain bacteria (green) and Cl. perfringens (red). Moderate amounts of Cl. perfringens cells are seen.](image2)

<table>
<thead>
<tr>
<th>Intestinal lesion</th>
<th><em>CpA</em> positive samples</th>
<th>Beta-2 positive samples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Culture (n=51)</td>
<td>FISH* (n=51)</td>
</tr>
<tr>
<td></td>
<td>Lp* Lnp*</td>
<td>Lp Lnp</td>
</tr>
<tr>
<td>Flaccidity of small intestine</td>
<td>24% 64%</td>
<td></td>
</tr>
<tr>
<td>Flaccidity of large intestine</td>
<td>19% 54%</td>
<td>32% 83%</td>
</tr>
<tr>
<td>Villous atrophy</td>
<td>22% 58%</td>
<td></td>
</tr>
<tr>
<td>Small intestinal epithelial lesions</td>
<td>60% 90%</td>
<td>25% 65%</td>
</tr>
</tbody>
</table>

Table 1. Associations between intestinal lesions and detection of *CpA* and beta-2 toxin. Only statistically significant associations (Fisher’s exact test, α=0.05) are shown. * FISh: fluorescent in situ hybridization using a *Clostridium perfringens* spp targeted probe. *Lp: Lesion present. Lnp: Lesion not present.

**Conclusion:** Demonstration of *CpA* or Beta-2 toxin was associated with absence of intestinal lesions.