**Clostridium piliforme**  
(formerly *Bacillus piliformis*)

**Host species**
- a broad range of laboratory, domestic, and wild mammalian species (Tyzzer 1917; Fries 1977)

**Properties**
- obligate intracellular spore-forming bacterium
- spores have been found to survive in bedding for at least one year (Tyzzer 1917)
- spores can survive multiple cycles of freezing and thawing (Craigie 1966; Ganaway et al. 1971)
- spores are highly resistant to formalin (Ganaway 1980)
- relatively sensitive to heat and certain chemical disinfectants (Ganaway 1980; Itoh et al. 1987)

**Susceptibility**
- depending on genetic factors of the host (Hansen et al. 1990; Van Andel et al. 1998; Waggie et al. 1981), e.g., DBA/2 mice are susceptible and C57/BL6 mice are resistant to Tyzzer’s disease (Van Andel et al. 1998); the Mongolian gerbil is very susceptible to the disease
- other factors predisposing to the disease include young age, immunosuppression, overcrowding, poor sanitation, and experimental procedures that may compromise the immune response
- isolates of different origin show heterogeneity (e.g. protein and antigenic differences) and host specificity (Boivin et al. 1993; Franklin et al. 1994; Riley et al. 1990)

**Organotropism**
- liver
- heart
- intestine

**Clinical disease and pathology**
- anorexia and diarrhea of different severity
- distended abdomen (megaloileitis) in affected rats (Hansen et al. 1994)
- inflammation of the ileum and large intestine
- focal necrosis in the intestine, liver and/or heart (Fries 1977)
- mesenteric lymphadenopathy
- brain lesions in experimentally infected *Mystromys albicaudatus* (Waggie et al. 1986)

**Morbidity and mortality**
- usually inapparent infection, low morbidity and high mortality in affected animals
- susceptibility to Tyzzer’s disease depends on genetic factors of the host (Hansen et al. 1990; Waggie et al. 1981)
- some isolates produce cytotoxins which may contribute to the severity of the disease (Livingston et al. 1996; Riley et al. 1992)
Zoonotic potential
- unclear; one case of infection in a patient with immune suppression has been reported (Smith et al. 1996)

Interference with research
- Natural infection of laboratory mice and rats could severely alter the findings of studies involving the cardiovascular, enterohepatic, and lymphoreticular systems as well as studies requiring immunosuppression (e.g. transplantation studies).

  - Physiology
    alteration of the activity of hepatic transaminases (Naiki et al. 1965)

  - Immunology
    elevations in serum levels of IL-6, IL-12, TNF-α, and IFN-γ (Van Andel et al. 1998, 2000a, 2000b)
    elevation of hepatic IL-12 p40 mRNA level (Van Andel et al. 1998)

  - Infectiology
    lower susceptibility to experimental arthritis caused by Yersinia enterocolitica (Gripenberg-Lerche and Toivanen 1993)

  - Pharmacology
    alteration of the pharmacokinetics of warfarin and trimethoprim (Fries and Ladefoged 1979)

References


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