CAR Bacillus
(Cilia-associated Respiratory Bacillus)

Host species

Properties
- CAR bacillus does not grow on cell-free media. Cultivation in cell lines and embryonated eggs is possible (Ganaway et al. 1985)
- the organism withstands freezing and thawing (Ganaway et al. 1985)
- CAR bacillus isolates of rat and rabbit origins differ in antigenic profile. Specific peptides of CAR bacillus isolates may represent suitable antigens for development of a specific ELISA for detecting CAR bacillus infection (Hook et al. 1998)
- CAR bacillus isolates differ in virulence (Schoeb et al. 1997)

Susceptibility
- mice seem to be most sensitive, followed by hamsters, rabbits and guinea pigs (Shoji-Darkye et al. 1991)
- BALB/c seem to be more susceptible than C57BL/6 mice (Kendall et al., 2000; Kendall et al. 2001)

Organotropism
- respiratory tract

Clinical disease and pathology
- dyspnoea, respiratory signs (such as wheezing), decreased activity and ruffled fur (Matsushita and Joshima, 1989), chronic respiratory disease (Ganaway et al. 1985, Matsushita 1986)
- bronchocentric lesions including lymphoid hyperplasia, ectasia of the major airways, mucopurulent exsudation (van Zwieten et al. 1980)
- suppurative bronchopneumonia and necrotizing interstitial pneumonia and leukocytic infiltration in the lamina propria (Griffith et al. 1988; France 1994; Medina et al. 1994)
- laryngeal, tracheal and bronchial epithelia are slightly hypertrophic and hyperplastic, with areas of loss of cilia (Kurisu et al. 1990; Matsushita 1991)
- squamoid changes in the bronchi, atelectasis, emphysema and bronchiecstasis; seldom death (Ganaway et al. 1985; Shoji et al. 1988)
- filamentous bacteria adhered to the respiratory epithelium (Griffith et al. 1988)
- lesions associated with CAR bacillus may appear as mild peribronchiolar lymphoid infiltrate, later airways may become dilated and mucosal hyperplasia can be found and may progress to metaplasia (Kendall et al. 1999)

Morbidity and mortality
- usually asymptomatic infections; low mortality (Ganaway et al. 1985; Shoji et al. 1988; Shoji-Darkye et al. 1991)
- chronic disease
Zoonotic potential

• unknown

Interference with research

• Effects on research are not documented. Infected rodents have abnormal tracheobronchial cellular morphology and an increased lung lymphocytic population, raising concerns about their suitability in respiratory, immunology, carcinogenicity and physiology studies. If ciliary function is altered through ciliastasis or loss of cilia, host respiratory response to pharmacologic or infectious agents might be impaired (Schoeb, 2007)

• An infection causes an elevation of gamma interferon (IFN) and interleukins (IL-4 and IL-10). Interleukins are predominant in CAR bacillus-induced histologic lesions in mice, while IFN may have a role in resistance to disease (Kendall et al., 1999)

• An infection causes an increase in B cells and in double negative T cells but no change in the amount of natural killer cells. This increase may be responsible for the lesions associated with CAR bacillus infection (Kendall et al., 2002)

References


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