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Pathological and epidemiological studies on equine glanders in Mongolia
(モンゴル国における馬鼻疽の病理学的および疫学的研究)

< Abstract >

B. mallei, the etiological agent of the disease known as glanders, primarily affects horses and is transmitted to humans by direct contact with infected animals. *B. mallei* remains distributed in horse populations in Asia, the Middle East, Africa, and south America. Mongolians have been using horses broadly for riding and daily life of nomads from ancient time. Horses are the closest animal for Mongolians so that equine glanders can endanger human health, food safety, economy (export and import) and national security. In Mongolia, government-let surveillance for glanders has not been performed recently, although sporadic glanderous cases have been reported by local veterinarians in Mongolia. The objective of this study was to perform pathological and epidemiological surveys of glanders in Mongolia.

In chapter I, histopathology of the lesions and immunohistochemical localizations of *B. mallei* in glanderous horses were investigated. Four horses that had been imported from Russia three years before located at two small farms in Nalaikh and Ulziit districts of Ulaanbaatar showed nasal discharge and multiple cutaneous nodules on the hindlimbs and abdomen. Clinical, gross and histological lesions observed in the four glanderous horses were similar to those in previously reported equine glanders. These results suggest that equine glanders occurs sporadically in Mongolia. The anti-*B. mallei* BpaB monoclonal antibody detected localization of the bacterial antigens in the cytoplasm of phagocytic cells in the pyogranulomas and abscesses in target tissues. In addition, some bronchiolar epithelial cells and alveolar type II cells contained the antigen. These results demonstrate that glanders occurs naturally in horses in Mongolia and *B. mallei* infects phagocytic cells and pulmonary epithelial cells in naturally infected horses.

In chapter II, blood samples used for seroepidemiological studies of

glanders were collected from 272 Mongolian native horses, 35 thoroughbred and 30 crossbreeds in central and eastern part of Mongolia. Of these horses, three Mongolian native and four thoroughbred horses showed clinical symptoms suggestive of glanders. All serum samples were examined by CFT and RBT to detect *B. mallei* antibodies. Of 337 horses, 28 (8.3%) and 26 (7.7%) were seropositive by CFT and RBT, respectively. Interestingly, seropositivity in crossbred horses of Mongolian native horses and thoroughbred horses was higher than that in Mongolian native horses. This study suggests that asymptomatic *B. mallei* infection is occurs in horse population in Mongolia.

These studies suggest that equine glanders is still endemic in Mongolian horse populations. Therefore, large-scale epidemiological surveys as well as establishment of control measures against equine glanders are needed to eradicate this disease from Mongolia.