

Occurrence of Suppurative Gastritis in BALB/c mice Infected with *Listeria monocytogenes* via the Intra-gastric Route

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Introduction

Listeria monocytogenes is a facultative bacterium that cause severe clinical disease including meningoencephalitis, septicaemia, and abortion in pregnant women, newborn infants, the debilitated elderly or immunocompromised people. In preliminary experiments on murine listeriosis we noticed suppurative gastritis in mice infected with *L. monocytogenes* by the intra-gastric route. The aims of the present study were i) to describe the histopathology of the experimentally listeria-induced gastroenteritis ii) to investigate the influence of bacterial strain and laboratory mouse strain on infectivity and on the severity of the infection; [3] to examine possible effects of preliminary intra-gastric administration of sodium bicarbonate.

Materials and Methods

FVB, C3H, C57BL/6, and ICR mice were each inoculated i.g with 10^9 CFU/0.5 ml of *L. monocytogenes* ATCC 19113 and BALB/c mice each with 10^9 CFU/0.5 ml of HPB 3 (4b), HPB 410 (1/2a), and HPB 503 (1/2b) strains of *L. monocytogenes*, respectively. Bacterial colonization, histopathology, and immunohistochemistry was examined in the gastric samples at 3 days post-inoculation.

Results and Discussion

The number of bacteria recovered from the stomach was higher in C57BL/6 and ICR mice than that in C3H and FVB, and more severe gastritis was observed in BALB/c and C57BL/c mice than in other strains. Gastritis in mice inoculated with HPB 3, 410, and 503 was much more severe than that in mice with ATCC 19113 strain. The inflammatory response occurred in the lamina muscularis as well as the mucosa of the fundus. Massive necrosis of gastric epithelia and oedema was observed in a large part of the mucosal layer of the fundus. In addition, the submucosal layer was apparently expanded due to

oedema, and the cardia, and mucosal layer had become thin and flattened. By immuno-histochemistry, using a polyclonal antibody against *Listeria* spp., positive labeling was observed in the gastric mucosa where there was an inflammatory response and gastric epithelial necrosis. These results show that *L. monocytogenes* can induce suppurative gastritis in mice.

References

1. Czuprynski, C. J. and Faith, N. G. *Clinical and Diagnostic Laboratory Immunology*, 2002, 9, 477-481.
2. Czuprynski, C. J., Faith, N. G. and Steinberg, H. *Applied and Environmental Microbiology*, 2002b. 68, 2893-2900.