Cytokines (IL 1β and IL 6) responses in non-pregnant does infected with corynebacterium pseudotuberculosis following intradermal route of infection in chronic state

Abstract

Corynebacterium pseudotuberculosis is the causative agent of caseous lymphadenitis (CLA) which commonly affects sheep and goats. The disease remains as a major disease causing economic loss to the small ruminant industries. There is little information related to responses of interleukin-1β and interleukin-6 in the chronic states. This study was designed to determine the serum concentrations of interleukin-1β and interleukin-6 (pg/mL) in non-pregnant does experimentally inoculated with Corynebacterium pseudotuberculosis via intradermal route in chronic form. Eighteen non-pregnant healthy Katjang does aged 2 years old were divided randomly into two groups. The control and the treatment groups consist of nine does each and were kept for 3 months. The control group was inoculated with PBS solution while the treatment group was inoculated intradermally with C. pseudotuberculosis. Serum samples were collected every 3 days (72 hours) for 3 months (2064 hours). The present study showed significant increase in IL-1β (278 ± 19.19 pg/mL) after 1day (24 hours) of post infection ($p<0.0001$) which decreased sharply (98.31 ± 19.19 pg/mL) after 5 days (120 hours) of post infection ($p = 0.9293$) and attained a significant concentration (217.43 ± 19.19 pg/mL) after 3 months (2064 hours) of post infection ($p<0.0048$) in does challenged with C. pseudotuberculosis compared to the control group. In contrast, the concentration of IL-6 increased significantly ($p<0.0001$) to (56.43 ± 1.98 pg/mL) in 2 months (1392 hours) of post infection and then decreased significantly ($p<0.0001$) to concentration of (22.18 ± 1.98 pg/mL) in 3 months (2064 hours) compared to the control group. In conclusion, the present study indicate that the importunity of C. pseudotuberculosis is associated with persistently high concentrations of IL-1β and low concentration of IL-6 which, when interpreted, could severely contribute to pathological vicissitudes and injury of organs and tissues in the chronic stage of C. pseudotuberculosis infections.

Keyword: Corynebacterium pseudotuberculosis; Chronic form; Interleukin-1β; Interleukin-6; Non-Pregnant does; Intradermal route