

**CYTOKINE RESPONSES OF DIFFERENT CATEGORIES OF LYMPHATIC  
FILARIASIS PATIENTS IN GALLE DISTRICT, SRI LANKA**

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Lymphatic Filariasis (LF) is one of the neglected tropical diseases (NTDs) which cause lifelong disfiguring complications. A complex network of innate and adaptive immune responses largely contributes to establishing a wide array of pathologies of filariasis, which are clinically classified into chronic, acute, and asymptomatic categories. Generally, in *in vitro* assays, filariasis infection is characterized by the predominant Th2 response. However, there is limited evidence of immunopathology of filariasis from the *in vivo* setting, particularly from different clinical categories. Therefore, the present cross-sectional study was conducted in Galle District in Sri Lanka during 2021-2022 to evaluate the pro and anti-inflammatory cytokine responses of different disease categories of filariasis: endemic controls, asymptomatic carriers, cryptic, chronic patients, and control groups. A total of 250 individuals (50/group) were included in the study. Participants were recruited based on random sampling frames, and basic demographic information was obtained from a self-administered questionnaire. Serum levels of cytokine (pro-inflammatory (Interferon-gamma: IFN $\gamma$ ) and anti-inflammatory (Interleukin: IL10) were assessed using a sandwich ELISA procedure. Statistical analysis was done using SPSS software. Chi-square test and one-way ANOVA with the Bonferroni test were done to compare the findings between groups. A higher male preponderance of positivity was observed among disease groups: antigen-positive cryptic patients ( $Z=2.3$ ,  $P<0.05$ ), microfilaria-positive asymptomatic carriers ( $Z=4.0$ ,  $P<0.001$ ), and chronic patients ( $Z=1.1$ ,  $P=0.25$ ). Chronic complications were higher with older ages ( $p<0.05$ ). Serum IFN $\gamma$  levels were significantly higher in chronic ( $273\pm 10.34$  pg/mL), endemic control ( $211.57\pm 5.78$  pg/ml), and cryptic ( $222.37\pm 6.54$  pg/mL) compared to the non-endemic control ( $193 \pm 6.54$  pg/mL) ( $p<0.05$ ). Asymptomatic carrier patients had a significantly higher IL10 level ( $151.3\pm 23.5$  pg/mL) compared to non-endemic control ( $61.99 \pm 2.96$  pg/mL) ( $p<0.05$ ). Also, the IFN $\gamma$ /IL10 (Th1/Th2) was significantly higher in both cryptic ( $5.58\pm 0.39$ ) and chronic ( $7.05\pm 0.47$ ) groups compared to the control ( $3.59\pm 0.24$ ) ( $p<0.05$ ). This study reports a predominant Th1 response in chronic patients, which contradicts the traditional immune response for exposure to antigens in filarial infection but supports immune response due to chronic complications and the difference in cytokine profile of older patients to younger patients. Thus, expanded studies are warranted for a comprehensive understanding of cytokine responses that could establish biomarkers of the progression of filariasis.

**Keywords:** Cytokines, Filariasis, Interferon-gamma, Interleukin-10, Sri Lanka