

Immunological Role of Two Chemokine (IL-8 and IP-10) of Women Infected with *Trichomonas vaginalis* in Diyala Province, Iraq

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Abstract

Serum level of IL-8 and IP-10 was assessed in serum of (54) Trichomoniasis women Iraqi patients ;as well as (35) healthy controls . The patients attended AL-Batol teaching hospital in Diyala for diagnosis and treatment during the period November to March 2015 . Serum level of IL-8 was significantly increased in Trichomoniasis women patient (3.47 ± 0.35 pg/ml) compared to controls (0.69 ± 0.12 pg/ml), the same result was shown in serum level of IP-10 which was increased in Trichomoniasis women patient (6.96 ± 1.02 pg/ml) compared to controls (1.37 ± 0.45 pg/ml) . This result suggested the role of IL-8 and IP-10 in pathogenesis of women infected with *Trichomonas vaginalis* parasite .

Keywords: *Trichomonas vaginalis* , IL-8 , IP-10

1. Introduction

Trichomoniasis is the most prevalent non-viral sexually transmitted disease in the world (Rahi et al., 2014) .It cause by *Trichomonas vaginalis* an anaerobic , parasite , flagellated protozoon (Shira and Frank, 2006). Humans are the only known host with the trophozoite transmitted principally via vaginal sexual intercourse and rarely via fomites (Mairiga et al.,2011). Approximately 180 million women worldwide may be infected with *Trichomonas vaginalis* (Jasim, 2012).

Classic symptoms and signs in women range from none at all to a severe acute inflammatory state , however it include purulent malodorous vaginal discharge with associated uritus , burning , dysuria and dyspareunia (Malla., 2012). The outcome of *Trichomonas vaginalis* may be due to genetic variability of the isolate and the host immune response (Uneke et al., 2006).More recently infection with this parasite has been associated with increased susceptibility to human immunodeficiency virus cervical cancer and aggressive prostate cancer (Ryan et al., 2011).

Infections are not self-limiting and produce non-ulcerative inflammation of the genital epithelium that can progress to necrosis and hemorrhage (AL-Saeed,2011). *T.vaginalis* recruits inflammatory cells to the site of infection following attachment to the surface of the genital tract and elicits aggressive local epithelium and exocervix in woman and urethra in men (Han et al.,2012). In the vaginal discharge of women infected with *T.vaginalis* there was a large number of human neutrophils and the life span of human neutrophils can be prolonged by stimulation with *T.vaginalis* which can produce chemokines IL-8 and IP-10 response to *T.vaginalis* stimulation (Young et al.,2011).

T.vaginalis secreted various immunological stimuli which may lead to vaginal mucosal inflammation (Mohamed and Rawaa , 2012).Two study showed that longevity of human neutrophils and macrophage stimulated with live *T.vaginalis* produce the chemokines IL-8 and other cytokines (Nam et al., 2012).

Interferon- γ inducible protein (IP-10) is a cytokine belonging to CXC chemokine family, it specifically activates its receptor (CXCR3), which is predominantly expressed on activated T and B lymphocytes , NK cell , DCs and macrophage (Nevill et al.,1997). Its expression levels have been associated with inflammatory diseases including parasitic diseases (Colvin et al.,2004). In various parasitic infection Th cell subsets and cytokines serve a central function as a main factors in the regulation of mucosal responses (Al-Lihabi and Juma ,2013). Little evidence regarding the role at immune responses in inducing protection in human trichomoniasis is available (Mohamed and Rawaa , 2012).

Accordingly the present study determined the serum level of IL-8 and IP-10 in a sample of women infected with *Trichomonas vaginalis*.

2. Materials and Methods

2.1 Patients

The study was conducted in AL-Batol teaching hospital in Diyala from November to March 2015, in which (54) cases of infected women with Trichomoniasis were investigated after they complained of clinical and laboratory diagnosis of clinical and laboratory diagnosis of *T. vaginalis* and (35) healthy women. 2.2 Assessment of IL-8 and IP-10 serum levels

Five milliliters of venous blood was collected from each clinical suspected women with *T. vaginalis* infection and healthy women as controls . The blood sample was immediately transferred to a plain tube and left

to clot at room temperature (20-25) for 15 minutes .Then , it was centrifuged at 1000 rpm for 10 minutes to separate serum , which was distributed into aliquots and stored frozen at -20c° until assayed for IL-8 and IP-10 level in sera . The assessment was carried out performed in accordance with manufacture’s specification .

2.3 Statistical analysis

Serum level of IL-8 and IP-10 was analyzed using the SPSS (Statistical package for social sciences) version 13. Their data were given as mean ± stander error (S.E) ,and difference between means was assessed by ANOVA (Analysis of variance) followed by LSD (Least significant difference) .

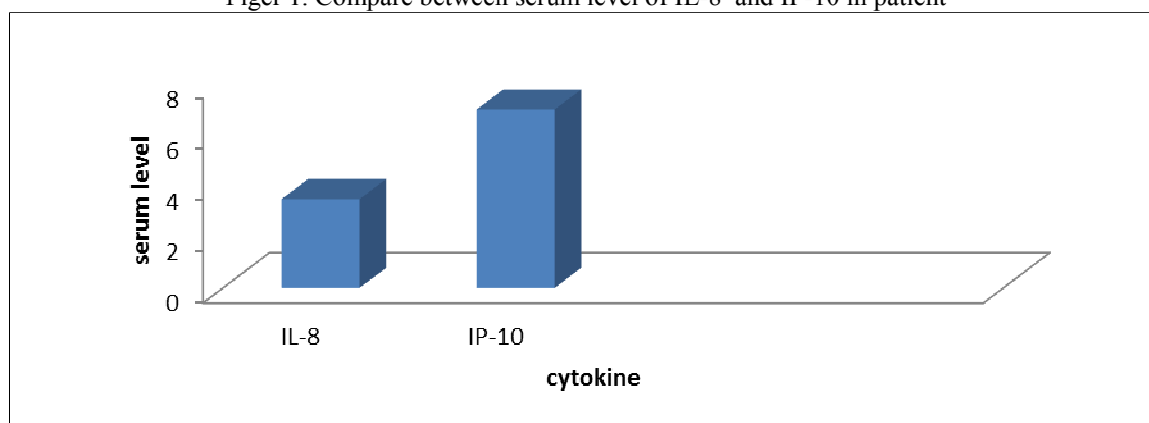
3. Results

In this study 54 women recorded infected with *T. vaginalis* and 35 healthy women as control detected by strip test , the serum level of IL-8 was showed a significant difference ($P \leq 0.001$) between patient (3.47 ± 0.35 pg/ml) and control (0.69 ± 0.12 pg/ml), and IP-10 was showed a significant difference ($P \leq 0.001$) between patient and control (6.96 ± 1.02 and 1.37 ± 0.45 pg/ml, respectively)(table 1), to compare between serum level of IL-8 and IP-10 the study showed that serum level of IP-10 was higher than serum level of IL-8 (figer 1).

Cytokine	serum level (Mean ± S.E.; pg/ml)		P≤	95%Confidence Interval
	controls (No = 35)	patients (No = 54)		
IL-8	0.69 ± 0.12	3.47± 0.35	0.001	0.22 – 3.50
IP-10	1.37 ± 0.45	6.96 ± 1.02	0.001	0.72 – 10.31

Table 1. Mean level of IL-8 and IP-10 in sera of patient and control

Figur 1. Compare between serum level of IL-8 and IP-10 in patient



4. Discussions

Sexually transmitted disease are a major global cause of acute illness ,infertility ,long term disability and death, with sever medical and psychological children (Jafaar et al.,2008), many local studies indicated comparable incidence of trichomoniasis in our community , this represented an important public healthy problem , which should be drawn to the attention of the public as well as health authorities (Mohammed and Rawaa, 2012).Varying observation reported that many cytokine responses in various microbial diseases depending upon distinct patterns of immune responses stimulated by different microbes and unique mechanisms for evading specific immunity (Bayraktar et al., 2005).

The present study showed a significant increase in the concentration of IL-8 and IP-10 in serum patient infected with *T. vaginalis* in comparison with control group, this cause my by because the cytokines and chemokines provide a mechanism for initiation , amplification or contamination of inflammation during status (Hanafi et al.,2013).Malla et al. 2007 recorded that cytokine responses might play a role in the elimination of *T. vaginalis* and thus might be maintaining low level of infection in asymptomatic infected subjects . Increased serum levels of IL-8 and IP-10 in the present study agreement with shaio et al., 1995 which shown that *T. vaginalis* induce blood monocyte to produce large amounts of bioactive IL-8 mainly by membrane components of *T. vaginalis* (MTV) monocyte –derived IL-8 inducing by MTV was dose and time dependent . Another study showed previously that *T. vaginalis* – induced neutrophil recruitment many be brought about by the IL-8 produced by neutrophils in response to activation by live *T. vaginalis* (Ahn et al., 2008).IP-10 is a key mediator of the interferon response preferentially attracts activated the lymphocytes to sites of inflammation which *T. vaginalis* infected (Azzurri et al., 2005). The increase in the incidence in this study may be due to the fact that there is no safe and effective method of prevention of trichomoniasis .Because of the potential side effects and

clinical failures associated with the therapy drug of choice, metronidazole and the reemergence of resistant strains novel strategies are needed for the control of *T.vaginalis* infection, including vaccine production (Mohammed and Rawaa, 2012).

5. Conclusion

In this study we concluded that there was a significant increase in IL-8 and IP-10 concentration in the serum of women infected with *T.vaginalis* in comparison with the control. This indicates a stimulation of humoral immune response during the infection with *T.vaginalis*.

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