Original Article

Some Immunological and Histopathological Changes for Frequently Aborted Women with Toxoplasmosis Infection

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Abstract

The investigation comprised physiological and histological exams of 70 women with Toxoplasmosis and 30 women who were not affected. Samples from 20 placentas were obtained from groups, as well as blood and physiological examinations. The findings of the current investigation displayed a fundamental increase in concentration of IP-10(133.5 ± 120) and MCP (220.9 ± 122) in blood serum of patients suffering from Toxoplasmosis infection and control group IP-10 (94.8 ± 82) and MCP (199.7 ± 76). There were histological changes in the placenta tissue in aborted women due to the rapid reproduction of the parasite, and large spaces in the tissue due to the parasite's formation of tissue bags, which resulted in the death of cells forming the placenta tissue due to the parasite's secretions and toxic substances. Abortion or congenital deformities in the pregnancy, as well as impairments to the newborn neurological system.

INTRODUCTION

Toxoplasmosis is one of the parasitic diseases which cause many health problems in both humans and animals Obstetrical termination in pregnant women who are at risk of having a child with a congenital defect that might harm the baby's nervous system. It affects the vital functions of the brain. In an animal, it may lead to miscarriage or death [1]. disease comes in either an individual form or an epidemic form, and its danger lies in Many infected individuals or animals may carry the parasite, but do not show symptoms.satisfactory except when there is a decrease in the level of immunity in the body [15], then what is called a relapse occurs The acute picture of the disease appears in the world as it is considered one of the diseases Toxoplasmosis is one of the most common diseases Which may lead to serious economic losses if it appears in an epidemic form in the herds to be reflected Its effects on the income of the farmer and the breeder in particular, and on the national income in general[2]. The monocyte is a kind of white blood cell. Chemotactic protein-1 is a tiny cytokine that belongs to the chemokine family and is a powerful monocyte chemotactic factor. It regulates the infiltration and migration of monocytes, natural killer (NK) cells, and memory T lymphocytes, as well as mediating its effects via its receptors. This is a critical immunological function [16]. Integration and cell migration are two processes that rely heavily on IP-10. It is secreted by several cell types under proinflammatory conditions in response to IFN-gamma, including monocytes, endothelial cells, epithelial cells, fibroblasts, and keratinocytes, and it is chemotactic. Furthermore, because IP-10 is frequently expressed in a wide range of illnesses, these new modes of action may contribute to IP-10's ability to drive inflammation [15]. IP-10 levels in the bodily fluids of people affected with viruses, fungi, bacteria, and parasites have been found to be abnormal [14] .

MATERIALS AND METHODS

Samples taken individually the current study took place in the AL- Najaf Alashrf city from July 1, 2021 to January 1, 2022. Patients with Toxoplasmosis infection who were commonly aborted were included in the research. Under the age of 30 who

recommended internal medicine doctors to Al-Hakim, Furat, and Sajjad hospitals for clinical examination. The total number of patients tested throughout the research period was 70, with 30 control samples. All participants gave their verbal agreement to participate in the study. After clinical examination by internists, who had symptoms of Toxoplasma gondii , they were referred by the the doctor to the laboratory for some appropriate tests. blood take from patients and empty the blood into the appropriate test tube, often EDTA Tube, and store it in a cool place, until its contents are separated and analyze [14]. To separate the serum from the coagulant particles, a blood sample is centrifuged for 15-20 minutes at 3000 RPM. The serum is then pipetted into Eppendorf's tubes of 100 microliters and maintained in the refrigerator at -20C until the laboratory analyses necessary in the research are completed. The measurement of human interferon gamma-induced protein 10 kDa (IP-10) Evaluation of the IP-10 protein using an ELISA kit and measuring it using an ELISA instrument [16]. Utilization of the ELISA equipment for the purpose of determining the amount of MCP-1 protein. And about 50 gm were taken for each model placed in plastic Sterile and clean container on NaCl (0.9%).attended textile sections based on the method of [3].

Analysis of data: The data are analysed using both descriptive and inferential statistical methods, and then processed using SPSS - 23[16].

RESULTS

Table 1: Comparison of the levels of IP-10 in blood serum between often aborted women infected with toxoplasmosis and the control group.

Type of sample	Condensation of IP-10 (ng/l) M±SD
Frequently aborted women	*133.5 ± 120
Control	94.8 ± 82
Tc	8.6
Tt p < 0.05	1.98

Table 2: Comparison of the rate condensation of MCP-1in blood serum between often aborted women with Toxoplasmosis and the control group.

Type of sample	Condensation of MCP-1(ng/l)M±SD
Frequently aborted women	*220.9 ± 122
Control	199.7 ± 76
Tc	2.6
Tt p < 0.05	1.98

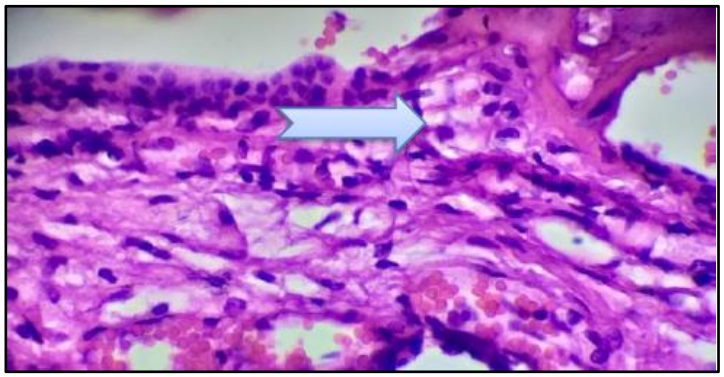

Figure 1: Section of placenta tissue of an Frequently aborted women showing the rapidly proliferating phase and the parasitic vacuole H&E 100X

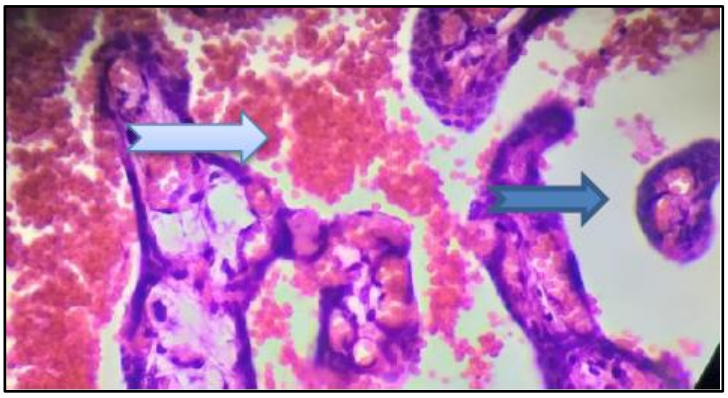

Figure 2: Section of placenta tissue of a frequently aborted women showing dilation and bleeding among placenta cells H&E 100X

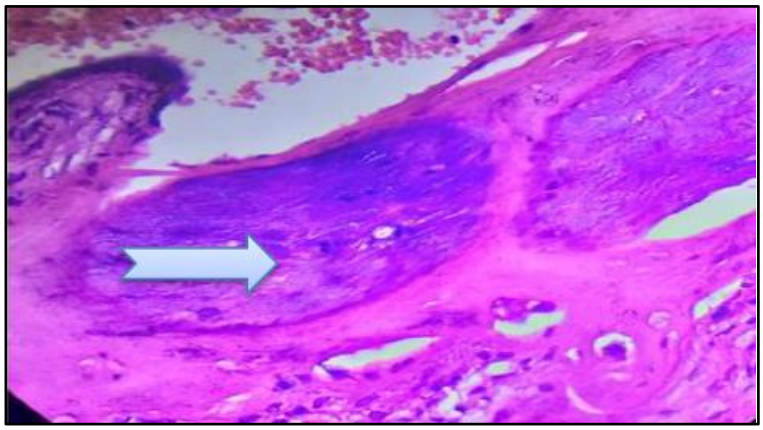

Figure 3: Section of placenta tissue of a frequently aborted women showing granuloma and inflammatory cells infiltration H&E 100X

DISCUSSION

The current investigation discovered that IP-10 concentrations in Toxoplasmosis patients were substantially higher ($p< 0.05$) (133.5 ±120 ng / l) than in the control group (94.8 ± 82 ng / l). IP-10 has a magnetising effect on activated T lymphocytes, which are the only inflammatory cells that have the chemokine receptor CXCR3 on their surface. Activated lymphocyte recruitment into the normal mucosa may be facilitated by IP-10, which is typically expressed by certain resident cells. However, IP-10 expression was consistently higher in active UC than in other chemokines, which is worth highlighting [4]. IP-10 is important for adaptive mucosal immunity and inflammation. IP-10 has been shown to play a vital role in the pathogenesis and is a promising therapeutic target based on several clinical and experimental findings. IP-10 attracts activated Th1 cells, NK cells, macrophages, dendritic, and B cells. IP-10 directs these cells to target/threat sites to alter innate and adaptive immune responses [5]. Regulation of IP-10, which has both anti-inflammatory properties and the potential to facilitate crypt epithelial cell regeneration, might become an unique treatment method for UC, due to its negative regulator activity for the crypt epithelial cell cycle [6]. The concentration of MCP-1 in Toxoplasmosis patients was higher (220.9 ± 122 ng/l) than in the control group (199.7± 76 ng/l), according to the current study. MCP-1 expression is elevated in intestinal inflammation, MCP-1 levels are increased in inflamed mucosa from CD and UC, and MCP-1 levels are measured as an indicator of the extent of mucosal inflammation in IBD [8]. Cell types that produce MCP-1 include endothelial cells, fibroblasts, epithelial and smooth muscle cells; however monocytes/macrophages are the predominant source of MCP-1 [7]. It is indicate that soluble substances may activate the NF-B pathway to cause production of the chemoattractant MCP-1 in epithelial cells, a strong macrophage chemoattractant in IEC. MCP-1 and other epithelial cytokines/chemokines are released as a result of this [9]. Apparently, the balance between epithelial MCP-1 production, release of other activating factors including tumour necrosis factor alpha and

gamma interferon, and parasite release of inhibitory substances all influence whether macrophages home in and destroy trophozoites [16]. In lesions, monocytes and macrophages may play a role in both the destruction of host tissue and the elimination of trophozoites. On the other hand[10], Stable macrophages may generate MCP-1 even in the absence of inflammation, and MCP-1-dependent macrophages may play a vital role in maintaining homeostasis and terminating excessive inflammatory reactions in the gut by generating IL-10. MCP-1 also activates cytotoxic T lymphocytes, which have been shown to destroy trophozoites [11]. Histological changes in the placenta tissue of women who had abortions showed that the tissue had collapsed because of the parasite's rapid reproduction and the presence of large spaces in the tissue [13], which was caused by the parasite's formation of tissue bags, which killed placenta tissue cells with their secretions and toxins. Abortion or congenital deformities in the foetus, as well as impairments to the newborn neurological system [12].

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