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بأشراف

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١.١ Introduction

The term Syphilis originates from the poem "Syphilis, siveMorbusGallicus" by GirolamoFracastoro, an Italian physician and poet (١٤٧٨–١٥٥٣), in which the fictional shepherd in the poem, Syphilus, is a victim of the disease (Baughn and Musher,٢٠٠٥). Syphilis once known as the Great Pox (Karumudi and Augenbraun ,٢٠٠٥). Syphilis is a sexually transmitted disease (STD) created by the *Treponema pallidum* spirochete, named because of its resemblance to a twisted thread (Treponema) and pale color (pallidum) (Singh and Romanowski ,١٩٩٩).

Syphilis is a chronic, multistage disease caused by infection with *Treponema pallidum* (Tp),Syphilis is commonly transmitted through contact with disease lesions of a sexual accomplice or from a contaminated pregnant lady to her baby. Although syphilis has remained endemic in sub-Saharan Africa and South-East Asia, it has recently re-emerged in several developed countries in the form of small, sporadic outbreaks and large, widespread epidemics (StammandMudrak, ٢٠١٣).

The infection is transmitted from individual toindividual through contact with a syphilis ulcer (during vaginal, anal, or oral sex). An infected mom can infect her baby via the placenta. Furthermore, intravenous drug addicts or other infected person can transmit syphilis through infected blood products i.e. through blood transfusion oruse of infected needles for example (Workowskiand Berman, ٢٠٠٦).

The clinical course of syphilis is divided into ٤ stages primary, secondary, and tertiary stages in which characteristic manifestations occur and a latent stage in which the patient is asymptomatic but seropositive (So *et al*.,٢٠٠٦).

TheTPPA (*Treponema pallidum*Particle AgglutinationAssays) and TPHA (*Treponema pallidum* Particle Haemagglutination Assays) are used to detect Treponema-specific antibodies.When positive, these tests commonlystay positive for life.The VDRL (Venereal Disease Research Laboratory) and RPR (Rapid Plasma Reagin) tests are non-specific tests distinguishing antibodies to cardiolipin (Naidu*et al* .,٢٠١٢).

IL-٢, discovered more than ٣٠ years ago in supernatants of activated T cells, is mainly produced by CD٤ and CD٨ T cells, and to a lesser extent by activated DCs and NK and NK T (NKT) cells (Morgan *et al* .,١٩٧٦).

IL-١٠ was first described in ١٩٨٩ as cytokine synthesis inhibitory factor, a TH٢-derived factor inhibiting the production of IFN-γ and other cytokines in murine TH١ cellsHowever, in the human system, IL-١٠ production is not a typical feature of TH٢ cells, because both TH١ and TH٢ cells are capable of producing IL-١٠, whereas the main source of T-cell–derived IL-١٠ is Treg cells (Fiorentino *et al*.,١٩٨٩).

IFN-γ Cells from the innate (eg, NK cells, NKT cells, macrophages, myelomonocytic cells) and adaptive immune systems (eg, TH١ cells, cytotoxic T lymphocytes, and B cells) produce IFN-γ (Gray *et al*.,١٩٨٩).

Complement ٣ (C٣) is an acute phase protein and important component of the complement pathways of the immune system (Walport , ٢٠٠١).The fourth component of the complement system (C٤) plays a vital role in mounting a fitting immune reaction against disease (Yang *et al*., ٢٠٠٣).

Anti-treponemal IgM antibodies are produced approximately ٢ weeks after initial exposure to *T. pallidum*, and IgG antibodies are detectable about ٢ weeks after IgM production (Sena*et al*., ٢٠١٠).

١.٢.The aims of the study

The present study was aimed to fulfill following goals:

١- Study the sero-prevalence of anti-treponemal antibodies in some Iraqi blood donor by TPHA.
٢- Evaluate some cytokines (IL-٢, IL-١٠ and IFN-γ) among syphilis patients by ELISA .
٣- Investigate the humoral immune response by measurement (IgG and IgM) in syphilis patients by RID.
٤- Assessment the complement component C٣ and C٤ in syphilis patients by RID.