STUDY OF LIPID PROFILE IN WOMEN INFECTED WITH 
TOXOPLASMA GONDII IN AL-NAJAF GOVERNORATE, IRAQ

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ABSTRACT
The study was conducted 60 out patients and 30 control women to determine the effect of infected with Toxoplasmosis on levels of cholesterol, HDL, Triglyceride, LDL and VLDL in aborted women infected with Toxoplasmosis in compared with healthy group. Who have visited Al-Zahra hospital and Al-Hakeem Hospital in Al- Najaf governorate during the period from October 2014 till April 2015. The results showed significant decrease (P<0.05) in levels of LDL. While increase in levels of cholesterol, Triglyceride, HDL, and VLDL no levels change in Toxoplasmosis infected women in compared to control group.

KEYWORDS: Toxoplasmosis, cholesterol, Triglyceride, HDL, and VLDL.

INTRODUCTION
The most common pregnancy complication is fetal loss, occurring in 25-30% of recognized pregnancies. Recurrent pregnancy loss affects at least 1% of all couples (Ford and Schust, 2009) and can be defined as two or more failed pregnancies (Asrm, 2012). T. gondii is one of the important obligate intracellular protozoan parasites, classified in the phylum Apicomplexa, a significant human and veterinary pathogen. It is enters the host via the digestive system and poses a severe risk for congenitally infected infants (Montoya and Liesenfeld, 2004). There are three types' strains of T. gondii. Type 1, 2 and 3 strains, type 1 is highly virulent (Black and Boothroyd, 2000). T. gondii the causal agent of toxoplasmosis, is an important water and food borne protozoan parasite ubiquitous throughout the world (Beattie, 1988; Frenkel ,1970) Toxoplasma gondii is a highly prevalent obligate intracellular parasite that has no host specificity and infects all warm-blooded vertebrates including...
mammals and birds. (Frenkel, 1970, Howe, 1995) It is the only known species in the genus *Toxoplasma* and is considered one of the most successful eukaryotic pathogen in the world in terms of the number of host species and percentage of animals infected worldwide (Frenkel, 1970; Grigg, 2003, Su, 2010, Tenter, 2000) *T. gondii* is transmitted by ingestion of tissue cyst, by ingestion of oocyst in contaminated vegetables and water or by congenital transmission (Beattie, 1988, Torrey, 2003) *Toxoplasma* infection is also implicated in etiologies of neurodevelopment and neurocognitive disorders like schizophrenia (Bernstein, 2007).

**MATERIALS AND METHODS**

**Blood collection**

The study comprised 60 infected patients with *T. gondii* of Al- Sadar Education hospital, AL-Zahraa hospital, AL-Manaithara hospital and Al-Hkeem hospital returner from October 2014 to April 2015 in Al-Najaf governorate. Five ml from each of blood samples was drawn in sterile tubes and remains for 30 minutes at room temperature. The samples were centrifugation at 3000 rpm for 5 minutes to separate the serum and collected in other sterile tubes, each sample of serum kept in deep freeze at -20°C.

**Measurement of lipid**

**Estimation of Total Serum Cholesterol**

Measurement of serum cholesterol by dependent on enzymatic method where cholesterol esterat lysis to cholesterol and fatty acid by cholesterol esterase (Bodeus, 2001).

**Estimation of Total Serum glyceride (TG)**

Measurement of TG in the serum by used enzymatic and colorimetric method, the Triglyceride in serum lysis enzymatically to Glycerol Phosphate and fatty acid by Lipase.

**Estimation of Total Serum High Density Lipoprotein (HDL)**

Measurement of (HDL) in the serum by used sedimentation Lipoproteins are found with HDL, its include (LDL, VLDL) by used phosphotungistic acid solution with found Mg++. The Very Low Density Lipoprotein concentration was calculated by using the following formula.

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\text{VLDL. Cholesterol (mg / 100 ml) = Tri- glycerides / 5}
\]

The Low Density Lipoprotein Concentration was calculated by using the following formula

\[
\text{Low density lipoprotein = Serum cholesterol - (VLDL+HDL)}
\]
RESULTS
The results of present study on Toxoplasmosis in patient revealed a significant increase (p<0.05) in levels of cholesterol, HDL and Tri (154.21±0.031) (159.5±0.11) (88.97±0.081) respectively in compared to control group (144.5±0.741) (55.42±0.130) (143.20±0.142) respectively as seen in figure (1).

While decrease in levels of LDL (68.9±0.720) in Toxoplasmosis infection patients in compared to control group and (78.844±0.442), but the VLDL remain normal in patient (33.81±0.081) in compared with control group (33.78 ±0.501) as seen in figure (1).

![Lipid profile mg/dl](image)

Figure1: comparison between cholesterol, HDL, Triglyceride, LDL and VLDL levels in Toxoplasmosis patients and Healthy group.

DISCUSSION
This study revealed remarkable results confirming that *T. gondii* decreases an atherogenic index in infected women. This confirmation approved by the lipid profile picture, which revealed increase in cholesterol and triglycerides and the lipid peroxidation status that characterized by significant increase in cholesterol and HDL levels. The relationship of serum cholesterol levels in human infected with parasites has drawn the attention of various workers. *Toxoplasma* cannot synthesize cholesterol novo and depends upon acquisition of LDL-derived cholesterol from the host cell, via endocytosis mediated by the LDL receptor (Coppens, 2000) or the LDL receptor-related protein. A mechanism by which host and not parasite cholesterol controls the entry of *Toxoplasma* into cells has been proposed (Coppens, 2003). These studies indicated that cholesterol does have an important role in
pathogenesis of toxoplasmosis. However, data on parasite lipid sources are scarce and the molecular mechanisms by which Toxoplasma acquires host cell lipids are largely unknown (Coppens, 2006). The previous studies have shown elevated levels of lipoproteins like HDL, LDL and total cholesterol in patients suffering from parasitic infection (Djoumessi, 1989). The changes in plasma lipoprotein were seen in many diseases such as in among those infected with HIV and taking antiviral therapy, total cholesterol, and in some cases, HDL was increased (Rimland, 2006), and the same results were obtained in this study especially with HDL. Future studies may be needed to characterize the HDL particle, during acute and chronic phase's responses of toxoplasmosis. In conclusion, this study showed that T. gondii had a role in changes lipid profile values in infected women which characterized by increase in cholesterol and HDL with a significant decreases in LDL level. Further studies are needed to maintain the effect of duration of the toxoplasmosis on the changes in lipid profile.

REFERENCE


