

Diagnosis of *Toxoplasma gondii* in Women by Dipstick Dye Immunoassay (DDIA)

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تشخيص طفيلي مقوس كونداي في النساء باستخدام الشريط المناعي

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الخلاصة :-

داء المقوسات هو مرض طفيلي يسببه طفيلي أبتدائي يعيش داخل الخلية يسمى مقوس كونداي. جمعت في هذه الدراسة ٤٩ عينة دم من نساء يعانين حالات أجهاض متكررة أثناء مراجعتهم الى مستشفى الكرامة في مدينة الكوت. فحصت للطفيلي باستخدام IgM مصول النساء للتحري عن الأجسام المضادة شريط الفحص المناعي. أظهرت النتائج بأن ٢٤ حالة (٤٩%) أعطت نتيجة موجبة و ٢٥ حالة (٥١%) أعطت نتائج سالبة، وان أعلى الأصابات كانت بعمر (٢٦-٣٥) سنة وأدناها في عمر (<٤٥) سنة. كما أشارت النتائج الى وجود علاقة بين انتشار الأصابة والتلامس بالقطط (٨٣%).

Abstract :-

Toxoplasmosis is a parasitic disease caused by an intra-cellular protozoan parasite, *Toxoplasma gondii*. In this study, 49 blood samples were collected from women with recurrent abortion who referred to the Al-Karamah Hospital at Kut city. Sera were tested for anti-Toxoplasma IgM antibodies by using dipstick dye immunoassay method. Seropositive cases were 24 (49%) and 25 (51%) serum samples were seronegative for anti-Toxoplasma IgM antibody. The higher infection (70%) among women in age (26-35) years and the lower (14%) in age (> 45) years. Also the results were showed there was relationship between the prevalence of disease and history of contact with cats 20/24 (83%).

Key words : Toxoplasmosis , Women abortion, Seroprevalence

Introduction :-

Toxoplasmosis is a disease of humans and animals caused by the protozoan parasite *Toxoplasma gondii*. The parasite is transmitted to humans by ingestion of the tissue cysts in raw or undercooked meat, as well as ingestion of food and water contaminated with oocysts from infected cat faeces (1,2).

The oocysts are very small and environmentally resistant, and can be ingested simply by touching contaminated hands to the mouth. Other species of animals, such as sheep, become infected by ingesting oocyst when they graze where cats have defecated. Once the oocyst is inside human or animal it can cause sudden disease or become quiescent (tissue cyst) for months to years. Humans can also become infected by consuming meat containing these tissue cysts. Finally, cats reinfect themselves by consuming an animal which contains the tissue cysts, typically some type of rodent. Once the tissue cyst is back inside the cat it goes through a cycle which ultimately results in the release of the oocyst back into the environment(3).

Toxoplasmosis causes a variety of disease syndromes in humans, ranging from flu-like symptoms in immunocompetant adults, to severe disseminated disease in immunosuppressed individuals, to birth defects in infants when women are exposed during pregnancy(4). There was a slight association between previous abortion and toxoplasmosis. Both IgG and IgM sero-prevalence were much higher among women from rural areas who had had previous abortion compared with women from the city(5).

Materials & Methods :-

Immunological test :

Five ml of blood was withdrawn from each woman, then sera were separated by centrifugation and stored at freeze -20 until as soon as used. Immunoglobulin M (IgM) antibodies to *T. gondii* were measured using a commercial kit (Quick Check U.S.A). It done according to manufacturer's instructions. This kit includes : Test device ; test line region (T), control line region (C), sample well (S), and develop buffer solution (6).

Procedure :-

- 1- 5 μ l of serum was added at location (T).
- 2-After 30 seconds 2 drops of develop buffer was added to sample well(S).
- 3-Result was read within 10 minutes, rose-pink color band in the test region (T) compared with rose-pink color in the (C) indicate positive result. The absence of color band in the test region (T) indicates the absence of any detectable anti-*Toxoplasma*, this means negative result.

Results & Discussion :-

Most of the serological tests that were used for the diagnosis of toxoplasmosis are not easy to apply in the field like : enzyme linked immunosorbent assay(ELISA) or the indirect fluore-scence antibody assay(IFAT), which require especial equipment and reagents and take time. So a rapid and in expensive colori-metric assay with robust reagents and no instrumentation could have many diagnostic application (6). In the present study the dipstick dye immunoassay (Quick Check, U.S.A)was applied for the detection of IgM antibodies of human toxoplasmosis, positive cases were 24(49%) (Table-1). Rana ,2002 showed that the ratio of anti-*Toxoplasma* IgM was 60 (43.7%)in pregnant women in Najaf province (7), and Masoodi *et al.* (2000) recorded that, 53.14% of women who were with recurrent abortion were positive (8).

Table-1: Sero-Positive cases of toxoplasmosis according to age(years)

| Age groups (Years) | No. tested | No. positive | % Positive |
|--------------------|------------|--------------|------------|
| 15 - 25 | 15 | 10 | 66 |
| 26 - 35 | 10 | 7 | 70 |
| 36 -45 | 10 | 5 | 50 |
| > 45 | 14 | 2 | 14 |
| Total | 49 | 24 | 49 |

Table -2 showed the prevalence of Toxoplasmosis among peoples who were with contact cats. The higher infection rate (20/24 ; 83%) reflected the influencing of cats in transmission of disease. The sources and ways of infestation are multiple ; the target host (the cat) is usually infested by meat ingestion and becomes the source of the oocysts, which in turn will be a potential infestation source for humans and other intermediary hosts (1,9). Studies of toxoplasmosis seroprevalence have shown a statistical correlation with close contact with cats (10, 11). In Iran population a sigificant association was found between *T. gondii* seroprevalence and close contact with pets including cats in all studied groups (12).

Table-2 : Distribution of positive cases according to age & contact with cats

| Age groups (Years) | No. positive | Contact with cats | % Positive |
|--------------------|--------------|-------------------|------------|
| 15 - 25 | 10 | 8 | 80 |
| 26 - 35 | 7 | 7 | 100 |
| 36 -45 | 5 | 3 | 60 |
| > 45 | 2 | 2 | 100 |
| Total | 24 | 20 | 83 |

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