Original Article

The role of Chloroquine phosphate on rheumatoid factor in patients with knee osteoarthritis

Eman S. Saleh* **PhD**
Kismat M. Turki** **PhD**
Mohammed H. Alosami*** **FICMS**

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Summary:

Background: Osteoarthritis (OA) is disorder of diarthrodial joints characterized clinically by pain and functional limitation. Rheumatoid factor (RF) represents one of routine laboratory tests that done for all patients have joint complaints. Chloroquine phosphate (CQP) is a disease modifying antirheumatic drug (DMARD) used for patients suffer from knee osteoarthritis (KOA) in order to reduce their RF value and improves the disease status.

Objective: To evaluate the effect of chloroquine phosphate on rheumatoid factor (RF) level in serum of patients with knee osteoarthritis KOA)

Design: case report.

Subjects and methods: RF value were assessed quantitatively by ELISA technique before and after treatmtnt for a total of fifty five patients with KOA (30 femal and 25 male) their age ranged from (50-66 years) selected randomly from out patient clinic in Baghdad Teaching Hospital , Medical City Baghdad; suffering from KOA. All patients were treated with oral dosage form of CQP for one month twice daily.

Results: Mean serum RF level was significantly reduced ($p<0.05$) in serum of patients after treatment with CQP for one month.

Conclusion:CQP is a disease modifying antirheumatic drug (DMARD) used for patients suffering from KOA in order to reduce their RF value and improves the disease status.

Key words_ Chloroquine phosphate, Knee osteoarthritis, Rheumatoid factor, Immunoglobulin and DMARD

Introduction:

OA is the most common form of arthritis, is characterized clinically by joints pain, tenderness, limitation of movement , crypitus , occasional effusion and variable degree of local inflammation but without systemic effect (1). Radiologically finds bony proliferation at joint margin, asymmetric joint –space narrowing and subchondral bone sclerosis developed as diseas progress.(2) CQ is used for treatment of RA ,SLE , and malaria.(3)

In this study CQP is dispensed for KOA patients as DMRAD in order to decrease RF value and to improve the sign and symptom of this disorder.

Subjects and methods:

Fifty –five patients (30 female and 25 male) are selected randomly from the out patient clinic in Baghdad Teaching Hospital , Medical center , Baghdad whom age ranged from (50-66)years , their mean are (56.92± 4.12).

According to signs , symptoms and radiographic evidence , all patients are treated with CQP tablet (Medoquine 250mg 150 chloroquine base), Medochem company, twice daily for one month .

This treatment is prescribed by a rheumatologist. RF value was assessed quantitatively by ELISA technique. Serum samples are incubated in the microplates coated with specific antigen (Ag).Patients antibodies (Ab) , if present in the specimen , bind to Ag .The unbound fraction is washed off in the following step .After wards anti-human Ig conjugated to hoarseradish peroxidase (conjugate) are incubated and react with the Ag-Ab complex of the samples in the microplates.Unbound conjugate is is washed off in the following step . Addition of the tetramethylbenzidine(TMB) substrate generate an enzymatic colorimetric (blue) reaction , which is stopped by diluted acid (color change to yellow). The rate of color formation from the chromogen is a function of the amount of the respective Ab in the patient sample (4).

AIDA, RF-check kit was purchased from aida gmba (autoimmune diagnostic assay).

Results:

Rf –check value is calculated as Mean± standard error of mean, paired t-test, M±SEM.

S=significant Pvalue ($P<0.05$).

RF value

* *University of Baghdad , college of pharmacy*
** *University of Baghdad , college of Medicine.*
*** *Baghdad Teaching Hospital*

U/ml	Baseline	1 month	Pvalue
T	22.1±2.18	10.29±0.8	S
M	21.25±3.65	10.01±1.46	S
F	22.65±2.79	10.47±0.93	S

T=Total patients
M=Male
F=Female

Discussion:

Rf , first was described in 1940 as antibodies reacting with gamma globulin , are autoantibodies directed against C-terminal part of constant region of the IgG heavy chain as IgG –Fc (5).

Rf are found both in the healthy population and several diseases , so the diseases commonly associated with high Rf concentration are RA , Sjogren's syndrome and SLE .The presence of IgM RF in the serum has been regarded as the most important serological indicator for RA as well as IgG and IgA subclass(4).

Pathologically in KOA , an affected joint experiences a progressive loss of cartilage , the slippery material that cushion the end of bones as result the bone beneath the cartilage undergo changes that lead to bony overgrowth and the tissue lines the joint can become inflamed , the ligaments can loosen and the associated muscle can woken(6).

The initiation of OA process is accompanied with enzymes proteases and their inhibitors releases, in addition to proinflammatory cytokines and acute phase proteins such as IgG , IgM ,IgA (1).

CQP is used previously as DMARD in KOA patients (8).It's role to improve the patients'status depending on it's ability to enter lysosomes (9).

Immune effects of CQP include, a decrease in lymphocyte proliferation interference with natural killer cell activity (10) and possibly alteration of autoantibody production (11).

Non-lysosomotropic effects include the inhibition of phospholipases , antagonization of PG and stabilization of lysosomal membrane in synoviocytes(12) (13)(14).

The presented data in this study showed a significant decrease ($P<0.05$) in Rf value in patient taking CQP for one month .table(1.1).

The result in this study in agreement with the mode of action of CQP (immune effect) that tend to decrease RF value level in the serum through it's effect on IgG , M , A concentration .

Conclusion:

RF value include (Ig G, M, A) represent a part of acute phase protein that is increased in KOA.

Chloroquine phosphate is a DMARD decreases the serum level of RF value significantly in patients with KOA and thus improves their signs and symptoms. In further studies are needed to assess other parameters such as enzymes and their inhibitors in synovial fluid and blood.

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