

# **Evaluation Interleukin – 8 and High Sensitivity C - Reactive Protein in Sera of Control Group and Human Female Patients with Osteoarthritis Nodal in Iraqi's Patients**

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## **Abstract**

The present study conducted on 30 female patients with osteoarthritis OA a attending Baghdad teaching hospital, in addition to 30 healthy females, all subjects were (35-65) year's old .Parameters were measured in the sera of patients group and healthy groups were interleukin -8 (IL-8) and high sensitivity C-reactive protein (hs-CRP).The results revealed a higher significant in all parameters of patients sera compared to healthy groups. Conclusion was obtained that IL-8 and hs- CRP were a markers or player inflammatory disease like osteoarthritis nodal

**Key words:** Interleukin -8(IL-8),High sensitivity CRP(hs-CRP) ,Osteoarthritis

## **Introduction**

Osteoarthritis (OA) is a slow progressive disorder of synovial joints .This joints disorder is characterized by a loss of balance between synthesis and degradation of the articular cartilage constituents leading to subsequent erosion of joint cartilage remodeling of the underlying bone osteophyte formation and variable degree of synovitis [1].When clinical characteristics of OA (pain loss of mobility and radiographic narrowing of the joint space ) manifest , the actual changes in articular cartilage and subchondria ,bone have started long ago[2].

Interleukins are group of cytokines [3] because they regulate in formation transfer among different types of leukocytes during various stage of immune or inflammatory response [4] secreted

Proteins/signaling molecules/ that were first seen to be expressed by white blood cells (leukocytes). The term interleukin derives from (inter-) as a means of "communication" and (-leukin)" deriving from the fact that many of these proteins are produced by leukocytes and act on leukocytes, it has since been found that interleukins are produced by a wide variety of body cells . The function of the immune system depends in a large part on interleukins and rare deficiencies of number of them have been described, all featuring autoimmune diseases or immune deficiency, the majority of interleukins are synthesized by helper CD<sub>4</sub>+T lymphocytes as well as through monocytes macrophages, and endothelial cells. They promote the development and differentiation of T, B, and hematopoietic cells. Interleukin – 8 one of these interleukins secreted from macrophages, lymphocytes, epithelial cells and endothelial

cells, CXCR1/IL8RA, CXCR2/IL8RB/CD128 were the target receptors, Neutrophils, lymphocytes were target cell [3] so as IL-8 was chemotaxis for Neutrophils [5].

C-Reactive protein (CRP) is member of the class of acute-phase reactant as its levels rise dramatically during inflammatory processes occurring in the body [6, 7][atherosclerotic plaques][9]. CRP binds to phosphocholine on microbes, it is thought to assist in complement binding to foreign and damaged cells and enhances phagocytosis by macrophages (opsonin mediated phagocytosis), which express a receptor for CRP[10]. It is also believed to play another important role in innate immunity as an early defense system against infections [11] so is used as a clinical marker of a cute systemic inflammation and infection [9] CRP a rise up to 50,000 fold in acute inflammation such as infection .It rises above normal limits within 6 hours, and peaks at 48 hours [12] .

A high – sensitivity CRP (hs-CRP) test measures low levels of CRP using laser nephelometry the test gives results in 30 minutes with sensitivity down to 0.04 mg\ L.

Normal concentration in healthy human serum is usually lower than 10 mg \L, Slightly increasing with ageing, higher levels are found in late pregnant women, mild inflammation and viral infection (10-40 mg \L), severe bacterial infections and burns 200 mg \L [13]

### **Aim of the Study**

The aim of this study is to evaluate some biochemical parameters such as interleukin - 8, (IL-8), hs-CRP in sera of OA female patients which is used as a clinical marker of an acute inflammation and infection.

## **Experimentaly**

### **Subjects**

The present study was performed on a group of 30 human females aged (35-65) years with on diagnosed by examining the patients by in the (Baghdad teaching) hospital and by x-ray examination on.

In addition, a group of 30 healthy females were enrolled in the study as control group.

### **Sampling**

Blood samples of 5ml were drawn all from subjects enrolled in this study, and kept in plain tubes left to clot at room temperature for /5 min. then centrifuged at 3500 g for 10 min to separate the serum.

### **- Interleukin – 8 (IL-8) determinations**

Interleukin 8(IL-8) has been estimated by using enzyme immunoassay (ELISA) technique. The procedure was done according to the manufacturer instruction as supplied with kit from Biosource Europe S.A. Company, Belgium.

### **- High sensitivity C - reactive protein (hs CRP) determination**

- High sensitivity C - reactive protein (hs CRP) enzyme immunoassay for the quantitative determination in human serum was used.

DRG international. Inc. USA. This is done by ELASA test.

### **Statistical analysis**

The results were expressed as mean± SD of mean, using student-test, significant Variation is considered significant when p-values are ≤ 0.05.

## **Results and Discussion**

Results obtained in the present study state that the serum level of IL – 8 was significantly higher in females patients with OA than in healthy control. (Table1),figure(1).

The elevated IL-8 level found in the serum of females' patients with OA of the present study is in agreement as in pervious studies [14, 15] who found increase in the level of IL-8 in serum of OA patients compared with control and found that serum levels of IL-6 in arthritis patients [like fibro myologi a syndrome (FMS) patients] was the same as in controls.

IL -8 is the major chemoattractant for neutrophils; it mediates changes in neutrophil shape.

Transendothelial migration, induces exocytosis of granule enzymes such as elastase and myeloperoxidase and a respiratory burst where hydrogen peroxide and super oxide radical are produced [15] IL-8 was upregulated by proinflammatory signals such as IL-1 and IL-17 and inhibited by anti -inflammatory cytokine (IL-4, IL-10) and glucocorticoids [16] furthermore IL-8 has been defined as a mediator of sympathetic pain [17].

### **C - reactive protein**

Results obtained showed that the serum level of CRP was significantly higher in patients with OA than in controls (Table1),figure(2).

These results are in agreement with other studies reported that CRP level is regularly used in the clinic, which is useful to discuss it in terms of a diagnostic tool and therefore as indicator of an underlying disease in acute infections.[18] Less is known on the CRP level in chronic disorders that have an Inflammatory disease component [19]

High sensitivity C-Reactive protein activates the complement system with a primary function to bind and detoxify endogenous toxic substance produced as a result of tissue damage [20] CRP is not only a marker of, but a player in, cardiovascular disease (CVD)., CRP may directly promote atherosclerosis and endothelial inflammation by attenuating the release of NO, a key molecule in the endothelium that plays a pivotal role in the maintenance of vascular tone [21]

In addition, besides the potent vasodilator effects of NO, it mediates many protective functions in the endothelium, for example inhibiting the of pro-inflammatory cytokines, chemokines and leukocyte adhesion molecules, there by limiting vascular recruitment of leucocytes and platelets [22].NO also inhibits vascular smooth muscle cell proliferation, an early sign of atherosclerosis. Therefore CRP may have an important deleterious role in the atherosclerotic process. i .e .by inhibiting NO formations however the involvement of CRP as a functional player in the endothelium has recently been questioned as it has been suggested that the pro-inflammatory effects by CRP might be due to contaminating artifact in the commercial CRP preparation [23].

Over the last few years there have been a lot of promising clinical markers proposed to link inflammation and atherosclerosis. One of these markers, hs – CRP [24].And these studies are in agreement with this study.

From the present study, a conclusion could be stated that IL-8 increase concentration in sera of OA patients is due to interleukins that, regulate information transfer among different types of leukocytes during various stage of immune or inflammatory response, which is confirmed by increase in hs –CRP concentration. This finding may indicate that inflammatory activity might influence cytokine production in these patients [25] [26]

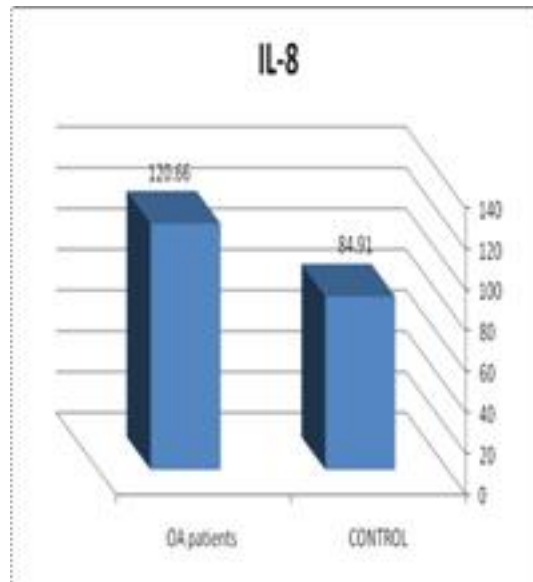
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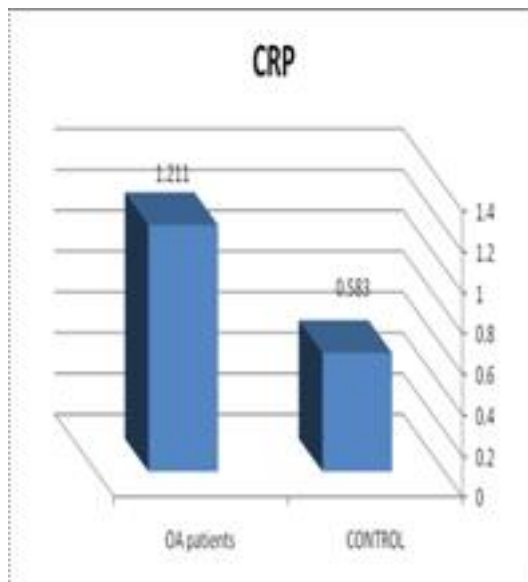
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**Table (1): IL-8 and hs –CRP concentration in sera of OA patients and control**

	OA patients n= 30	Control N=30	P value
IL-8 Pg/ml Mean ±SD	120.66±37.42	84.91±14.58	p<0.05
Hs-CRP mg/dl Mean± SD	1.211±0.524	0.583±0.141	p<0.05



**Fig .(1) : IL-8 concentration in sera of OA patients and control.**



**Fig .(2): ) hs –CRP concentration in sera of OA patients and control.**

## تقدير الانترليوكين الثامن وبروتين سي الفعال العالي الحساسية في مصل مجموعة نساء أصحاء مريضات بالتهاب المفاصل العقدي في العراق

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### الخلاصة

تضمنت هذه الدراسة 30 مريضة بالتهاب المفاصل العقدي أخذت من مستشفى بغداد التعليمي فضلاً عن 30 من النساء الأصحاء. وتراوحت أعمار المجموعتين بين 35-65 سنة ، وقيست المتغيرات الحيوية في مصل الدم للمجموعتين ، (الانترليوكين الثامن، وبروتين سي الفعال العالي الحساسية) . عكست جميع النتائج فرق إحصائي معنوي محسوس مرتفع في مصل نساء المجموعتين . نستنتج من ذلك انه يمكن استعمال هذين المتغيرين مقياساً لمعرفة الأمراض الالتهابية، مثل التهاب المفاصل العقدي

