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# Relationship between Congestion Heart Failure and some of Renal functions in Hospitalized patients

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## ABSTRACT

The purpose of this study was to estimate some of the indicators of renal function in congestive heart failure patients. The study included the measurements of the total protein, albumin, urea, creatinine and uric acid levels in blood serum of 125 samples: 75 of them satisfactory sample of patients (Male) With heart failure and 50 (Male) healthy people of the sample were used as a control. The results were as showed a highly significant increase in serum levels of urea and creatinine in in patients with CHF compared with controls groups,. While there were no significant differences in the level of uric acid between patients and control groups. The patients with CHF were found highly significant lower in the levels of serum albumin and total protein compared with controls groups. Conclusion: The results obtained in the present study indicate that serum urea and creatinine and uric acid might play an important pathogenic role not only in the occurrence but also in the severity of CHF.

## Introduction

The heart contribute with kidneys in maintain hemodynamic steadiness and perfusion of the organ exudation by complicated to the net-work. Communicates the heart and kidneys with each other through a network of a kind track in an dependent linkage [1]. The rise of both central venous pressure and intra-abdominal, as a result for lower cardiac output, and "cardiorenal connectors or" like inflammatory and neurohormonal [2,3]. It was previously thought that the decline in cardiac output in patients with heart failure was due to reduced blood flow in the kidney, leading to kidney failure. therefore, this urine for patients with heart failure leads to renal failure. therefor, many studies unable to found an a link inter alia cardiac output and renal failure or other blood circulation indicator [4,5], so, must be a further path participatory at the progress of cardio renal syndrome. rise the pressures in-abdominal as a result from ascite and ventral wall edema may be linked with worsen renal functions in congestive patients with heart failure [6]. the progress of CRS depended in many neurohormonal and inflammatory agent. These include rise producing of ROS, as well as activity of sympathetic which can lead to necrosis and myocarditis hypertrophy [7].Common mark and symptoms linked with kidney disease contain rise creatinine and uric acid levels, lower urine output, nausea, vomiting, decreased appetite, weakness, fatigue, sleep problems, muscle cramps, reduced mental sharpness, swelling of your feet and ankles and persistent itching[8]. the albumin in liver protein, and its plasma concentricity it is controlled by many agent, inclusive average of albumin induction, rate of catabolic, allocation of albumin, and exogenous albumin lack[9] Creatinine is a breakdown production of creatine phosphate in the muscles, creatinine in serum is an importance parameter of kidney health due it can be readily measure by production of muscles metabolism that is secrete without change by the renal[10]. measure of total serum protein concentration supply general information think disease states in many organ systems[11] Urea in the blood rises in the following cases : increased produce of urea in the liver by a rise protein diet or increased protein catabolism (e.g. major illness, stress, fever, corticosteroid therapy or gastrointestinal bleeding uric acid serum is rise, it was found to be a graduated sign of risks for the

develop of heart failure, acute renal failure and stroke[12, 13].This study aimed to investigate the effects of Congestiion heart failure and it's relation wih some biochemical renal functions .

## Materials and Methods

Blood samples were collected from 75 patients with congestive heart failure, in Rizgary Teaching Hospital in Erbil City from March 2016 to October 2017. this study included male patients their age range from 45 to 80 years who were selected depending on the special questionnaire.

The age of the controls and Patients were nearly matched.‹The average of age for patients with CHF was (45.4±3.14) to (80±22.21years) was slightly higher as compared to controls (44.4±3.14years)to (80±22.21years ).

The blood urea and serum creatinine had been determined by using kit from Biolabo Company (France). And serum of uric acid concentration by use method [14] kit from Biolabo Company (France). Also thee estimation of total proteins by using method[15]the kit supplied by Human company (Germany). Estimation of serum albumin had been done by using kit from Biolabo Company (France) relate to method[16].

**Statistical Analysis**

We used (Minitab) program for statistical analysis window, version (16.0) to calculate the mean, and standard deviation. The independent test was used to compare the independent variables. Statistically. *P* value of 0.05 and 0.01 is considered significant [17].

## Results

The results showed in figure(1) (2) that there was a significant increase (P<0.01) in serum creatinine level in CHF patients (1.355 ±0.833) compared with control group (0.788 ± 0.201).and also showed that there was a significant increase in levels of blood urea in patients with CHF (52.1 ±26.9) compared with controls groups (34.02 ± 5.11).While there was no significant differences in the level of uric acid figure(3) between patients and control group as in figure(4)significant decreases in serum of Albumin (3.368±0.524) of CHF patients (p<0.01) compared with controls groups(4.196±0.451).Also there was (P<0.01) a significant decrease as in figure(5) in serum of total protein level in CHF patients (68.04±6.86) compared with control group (75.65±2.79).

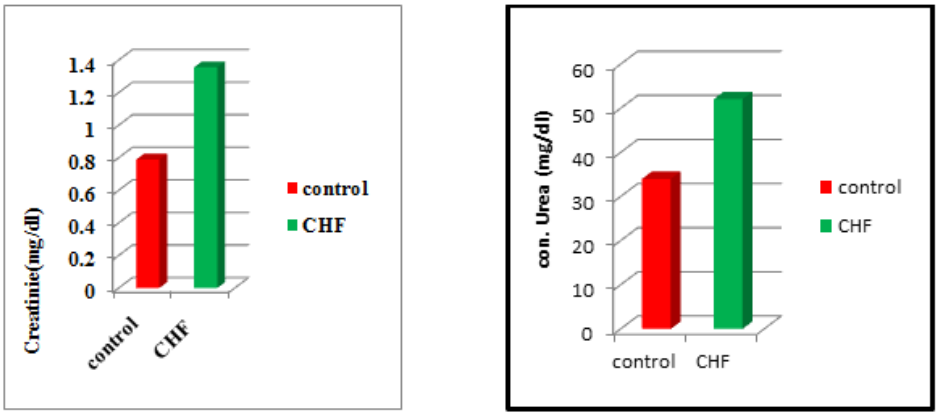


**Figure (1,2): Concentration of serum urea and creatinine in patients with CHF and the controls.**

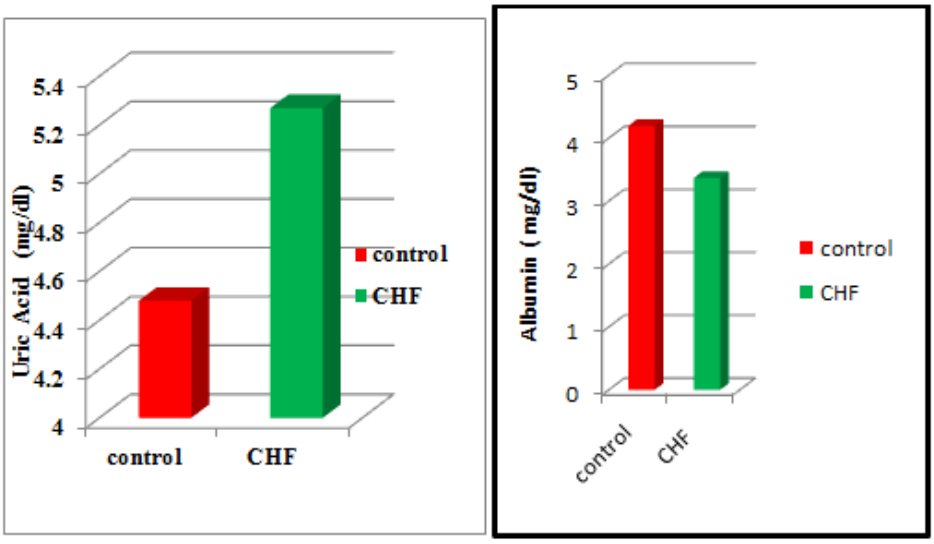


**Figure (3,4): Concentration of serum uric acid and albumin in patients with CHF controls**

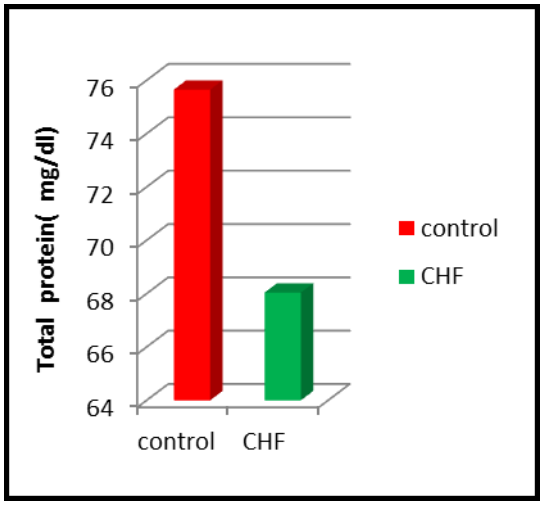


**Figure (5): concentration of serum total protein in patients with CHF and the controls**

## Discussion

Urea plays an essential and direct role in fluid and sodium balance operation tight control by neuro-hormonal systems[18]and can be caused by lower blood flow through the kidneys like: congestive heart failure, low blood pressure, shock, dehydration, bleeding. this could be increase of blood urea[19].

The average of urea secretion is lower out of ratio to the decrease in GFR, result to, the average removal of urea is decrease in equivalent to GFR, and this impact may leading to kidney trouble, and this could be increase of blood urea [20].congestive heart failure is oftentimes linked with a fast fall in kidney function and enough control of congestive heart failure can inhibit [21].

The reverse is also true: treatment of acute kidney disease can block congestive heart failure. increase creatinine levels and a larger higher in serum creatinine have been linked with a longer hospital remain, higher in-hospital and long-range death-rate, and higher hospitalization average. Also we found no significant differences in the level of uric acid between patient GHF and control, this result agrees with another study reported that urea was not elevated or one of the risk factor for cardiovascular event [22,23]. Albumin may be considered an important compound of plasma anti-oxidant vitality, firstly, binding free fatty acid, and free radicals. In this cause ,the total serum proteins concentration may change under oxidative stress linked with heart disease[24].

The Hypoalbuminemia is link in patients with heart failure, and this status increases prevailing with higher illness and age [25] Lower albumin rangin linked with worst sign of HF and intra-cardiac fill pressures but they were not linked with echocardiographic indicators of the weak of heart [26].

The lower in the serum levels of total protein and albumin may be refer to the following causes :changes in structural of basement and some lower molecular weight proteins. protein-uria is considered as a marker of renal disease progress[27].

## Conclusions

Congestive heart failure disease is one of the most popular diseases in the city of Erbil .It is a common disease in men congestive heart failure disease causing an decrease in albumin level as indicate to decrease in renal function, There is a relationship (direct and indirect) between heart failure and renal function.

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# العلاقة بين فشل القلب الأحتقاني وبعض الوظائف الكلوية لمرضى راقدين في المستشفى

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**الملخص**

الغرض من هذه الدراسة تقييم بعض مؤشرات الوظيفة الكلوية في مرضى فشل القلب الاحتقاني. تضمنت الدراسة تقدير تراكيز البروتين الكلي، الالبومين، اليوريا، الكرياتنين وحامض اليوريك تم قياس هذه المؤشرات في مصل دم125 عينة: استخدمت (75) عينة منهم مرضى فشل القلب الاحتقاني (ذكور)،50 عينة منهم للأصحاء(ذكور) استخدمت كمجموعة سيطرة وكانت النتائج كالاتي: وجود ارتفاع عالي المعنوية في تركيز اليوريا والكرياتنين لمصل دم مرضى فشل القلب الاحتقاني مقارنة مع مجموعة السيطرة (الاصحاء)،عدم وجود اختلاف معنوي في تركيز حامض البوليك في مصل دم مرضى فشل القلب الاحتقاني مقارنة مع مجموعة السيطرة( الاصحاء)، وجد انخفاض عالي المعنوية في تركيز البروتين الكلي والالبومين في مصل الدم لمرضى فشل القلب الاحتقاني مقارنة مع مجموعة السيطرة (الاصحاء). الاستنتاجات: النتائج التي تم الحصول عليها في هذا الدراسة تشير الى ان اليوريا والكرياتنين وحامض البوليك قد تلعب دورا هاما مسببا للمرض وكذلك في شدة المرض وتكشفه.