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Original Research Article

Estimation of Some Biochemical Parameters in Oedema Patients

Israa Burhan Raoof[1], Hayder Hussein Luaibi[1*], Mayssaa E. Abdalah[1], Tabark Mohammed Jasim[1]
[1]Department of Clinical Laboratory Science, Mustansiriyah University, Baghdad – Iraq

***Corresponding Author:** Hayder Hussein Luaibi
Department of Clinical Laboratory Science, Mustansiriyah University, Baghdad – Iraq

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Abstract: Oedema is defined as accumulation of water in the extravascular cell, which is in the normal conditions, total body water should be regulate between intravascular and extravascular to maintain normal concentration and any dysfunction of these mechanisms lead to edema which occurred by different pathways, either excess fluid filtrations or inadequate drainage of interstitial tissues by lymphatic vessels. In other hand, when liquid accumulated in the tissues by retention or swelling in the feet or hands can lead to skin tight, feel heavy, pain joint. Recent studies refer to complications related to edema includes circulation of blood, clotting, obesity, liver and kidney disease in addition to heart injuries with the lymph nodules. The result include a comparison between some important biochemical changes between control and patients' groups, data were collected from thirty patients and thirty healthy people, there was noticed in the study, no significant increase in the levels of AST and ALT while appeared significant increase in ALP in patients compared with control group, and no significant decrease in albumin in patients compared with control group, also there was no significant decrease in levels of Na+ and K+ while appeared significant decrease in Cl– in patients compared with control group, finally there was no significant increase in glucose while appeared significant decrease in Hb in patients compared with control group.

Keywords: Oedema, Fluid Retention, Kidney Diseases.

INTRODUCTION

Retention or swelling the fluids lead to abnormal enlargement of tissues in the body, uncontrolled contribution of sodium and water in the vascular and interstitial spaces was caused by renal failure [1], kidneys secreted antidiuretic hormone regulate of blood pressure and water distribution, it was responsible of extracellular and intracellular sodium concentration in the blood, therefore, some ions specially sodium should maintain within normal range in patients with oedema therefore Sod. chloride and other salts should be carefully intake because play important in the regular of extracellular fluid [2]. Recently, many studies suggest the role of alkaline phosphatase and levels of minerals especially phosphate as predictor the mortality in patients with renal failure [3-5], oedema can lead to respiratory failure with subsequent need of re-intubation therefore honest intubation is associate with increase morbidity and mortality, and it is important to prevent re-intubation if possible [6, 7], patients treated with restricted of sodium in the loop of kidneys may use in combination with other minerals while other treatment involved raised legs could helped. In patients with heart disease especially myocardial infarction used spironolactone drugs as therapeutic purpose to decrease dangerous, while dihydropyridine with angiotensin converting inhibitor or blocker in addition to exercise used to treat Lymph oedema which protein precipitate in the interstitial fluid, in some cases, paracentesis is preferred which a needle or catheter insert in to the peritoneal cavities to get ascitic fluids for diagnoses or treatment [8].

PATIENTS & METHODS

In this study, data was collected from patients in the Al-kindi Teaching Hospital, in addition, information's data was collected from sheet of medical files which contain ultrasound picture, demographics, family history and treatment while, serum was taken by centrifugation then identified by labeled number in the gel tube of patients and heathy subjects,

kept at minus twenty centigrade to complete results and compare between 30 people (control groups) and 30 patients (patient groups).

Statistical Analysis

Data was analyzed by used a statistical package of SPSS (Statistical Packages of Social Sciences- version 18). The level of significance consider P.value less than 0.05.

RESULTS AND DISCUSSION

This research included a comparison between some important biochemical changes of control and patients' groups, The result include a comparison between some important biochemical changes between control and patients' groups, data were collected from thirty patients and thirty healthy people, there was noticed in the study, no significant increase in the levels of AST and ALT while appeared significant increase in ALP in patients compared with control group, and no significant decrease in albumin in patients compared with control group, also there was no significant decrease in levels of Na+ and K+ while appeared significant decrease in Cl- in patients compared with control group, finally there was no significant increase in glucose while appeared significant decrease in Hb in patients compared with control group.

Table 1: Biochemical parameters between control and patients groups

Parameters	Control Mean ± st	Patient Mean ± st	P.value
ALP (u/l)	92.42 ± 36.93	187.8± 114.73	0.004*
ALT (u/l)	16.9 ± 22.13	29.1 ± 2.66	0.3
Albumin (g/dl)	4.42 ± 0.365	2.8 ± 1.0	0.04*
Total protein (g/dl)	6.86 ± 0.29	3.76 ± 2.48	0.05*
Urea (mg/dl)	21.9± 2.74	116.8 ± 2.8	0.01*
Creatinine (mg/dl)	0.96 ± 0.11	6.58 ± 4.01	0.02*
Na^+ (mmol/l)	141.3 ± 0.6	143.5 ± 14.58	0.9
Iron	21.28 ± 2.98	34.66 ± 14.13	0.13
K^+ (mmol/l)	4.89± 1.43	4.89 ± 0.06	0.7
Cl^- (mmoml/l)	99.6 ± 5.35	100.29± 12.5	0.05*
Calcium (mg/dl)	2.26± 0.13	7.58 ± 1.01	0.005*
Glucose (mmol/l)	74.2 ± 11.30	151.9 ± 72.10	0.05*
HGB (g/dl)	13.55± 0.63	7.87± 2.006	0.03*

DISCUSSION

According to our results, increased levels of ALT and ALP in oedema patients refers to impaired functions of liver which accumulated of water and sodium in the abdominal tissues and legs, it was demonstrated by recent studies, explain the relation between swelling and liver disease.

In the mechanism of this pathway, high pressure in the vein carried blood from intestine and spleen to get swelling in the abnormal and legs, it was referred by recent studies which confirmed of swelling in the legs (oedema) and abdomen (ascites), accompanied decreased urine production. On the other hand, acute kidney injury, either impaired glomerular or tubular can lead to leg swelling in the body because impaired filtration or reabsorption of water throw the kidneys which developed to buildup of the fluid in the body [9], sodium concentration usually related with changes in extracellular fluid (ICF), it was affected by hyponatremia (increased intracellular water), and hypernatremia (increased extracellular water). Keratosis pilaris was a very common, dry skin conditions related to accumulate of keratin in the follicles [10], in addition the results showed, significant decrease in the levels of albumin and total protein with a significant increase in the levels

of creatinine and urea in patients compared with control groups, urea produced in the liver by degradation of amino acid during catabolism of nitrogen bases, therefore, there was two rate should be equal in the urea metabolism, production by liver and excretion by kidney, in patients with renal failure, the concentration of urea was increased and lead to oedema and chronic kidney disease [11], reduce glomerular filtration in renal failure beside increase reabsorption of tubular can lead to increase level of urea in the blood due to protein intake or catabolism of tissues [12], one way excretion of creatinine by kidneys therefore, it was the most significance parameter of diagnosis, so a high creatinine level indicates poor control and failure which swelling or retention was occured. Also as showed in the results, there was no significant increase in both of Na + and iron while decrease in K + and significant increase in Cl_ and Ca++ concentrations in patients compared to control groups because sodium is the most available electrolyte existence in the out of the cell thus mainly cation responsible for transmission of electrical impulse in the heart and nervous systems. However, since it does not readily a cross of the cell membrane, sodium playing an essential role in controlling water throughout the body by regulating extracellular fluid (ECF) volume [10], according of many studies was suggested the main causes of oedema is decreased level of potassium in the blood because many vital functions depend on its, for example low pressure, fluid equilibrium, muscle contraction and signal of nervus cell [13], also potassium function play important role in the retention and swelling in the arm and face which can lead to dehydration and concentrated dark color of urine with signs of thirsty and weakness [14], in addition, diabetic oedema patients showed a significant increase in the levels of glucose [15, 16], with a significant decrease in the levels of hemoglobin which peripheral edema in the foot, ankle, and legs when small blood vessels are damaged or leak into surrounding tissues [17], finally, studies was improved abnormal level of hemoglobin was related to heart failure with acute pulmonary oedema [18].

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