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Kidney Failure and Hypertention

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَإِذَا مَرَضْتِ فَظُورِي يَدْفَعِينَ

صدق الله العلي العظيم

سورة الشعراء: الآية ٥٠



الاهداء

الى

الذي خط طريق حياتي واحاطني بدفء قلبة وحنانا لمن كان معلم عند جهلي وقدوتي
في حياتي وخليلي عند شجونني

والدي ... براو وفاء

الى

من خصها الله بالجنة رمز العطاء الى من ذكراها لايفارقني ماحييت

والدتي ... براو وفاء

الى

من استظل بظلمهم واستنير بنورهم الى مصدر قوتي وفيض روعي اخوتي واخواتي
... عرفانا بالجميل

الى

كل القلوب المخلصة التي قدمت لي العون وتمنت لي الموفقة والنجاح

اساتذتي الافاضل

اهدي لكم هذا الجهد المتواضع

الباحثون



شكر وتقدير

الحمد لله والحمد حقه كما يستحقه حمدا كثيرا

لا يسعني الا ان اتقدم بجزيل الشكر والتقدير الى **الدكتور زينب نجم عبد الله**

المحترمة لما قدمته لنا من مساعده علمية ولجهودها المبذولة معنا للأرتقاء

بالبحث بهذا الشكل راجين العلي القدير ان يوفقها لكل خير وسداد ...

كما واتقدم بوافر الشكر والتقدير والاحترام الى الاستاذ الفاضل **اد نبيل عبد عبد الرضا**

عميد كلية العلوم

شكري وتقديري الى **ام د مقداد ارحيم كاظم** رئيس قسم الكيمياء والتدريسين والى

الكادر كما اقدم شكري وتقدير الى والداي لانهما الاساس في الوصول الى هذا

المستوى.

الباحثون

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Summary

This research, focused on Kidney failure and are studying the problems related to this disease. Kidney failure and the effects that occur due to this disease have been explained. One of the reasons that was discussed in details, is a blood pressure. Blood pressure is one of the main causes of kidney failure. The relationship between renal failure and high blood pressure was discussed and how it affects kidney function. Blood pressure affects the glomeruli and therefore affects the kidneys and contributes to renal failure. There have also been talked about types of kidney failure (acute renal failure) and (chronic renal failure), as well as methods of prevention of disease and methods of diagnosis and the same methods of treatment. Recommendations were then developed to prevent the disease progression.

1.1 Introduction:

The kidneys are two bean-shaped organs, each about the size of a fist (Figure 1). They are located just below the rib cage, one on each side of the spine. Every day, the two kidneys filter about 120 to 150 quarts of blood to produce about 1 to 2 quarts of urine, composed of wastes and extra fluid. The urine flows from the kidneys to the bladder through tubes called ureters. The bladder stores urine. When the bladder empties, urine flows out of the body through a tube called the urethra, located at the bottom of the bladder. In men the urethra is long, while in women it is short. Kidneys work at the microscopic level. The kidney is not one large filter. Each kidney is made up of about a million filtering units called nephrons. Each nephron filters a small amount of blood. The nephron includes a filter, called the glomerulus, and a tubule. The nephrons work through a two-step process. The glomerulus lets fluid and waste products pass through it; however, it prevents blood cells and large molecules, mostly proteins, from passing. The filtered fluid then passes through the tubule, which sends needed minerals back to the bloodstream and removes wastes. The final product becomes urine. The kidneys filter the blood and excrete the waste and surplus fluid into the urine. When the kidneys are damaged, waste and excess fluids accumulate in the body, which may be dangerous. The deterioration in kidney function is slow as symptoms worsen as chronic kidney failure worsens. Occasionally, no symptoms of the disease are detected in the early stages, and are therefore detected only at later stages. Treatment focuses on slowing deterioration of kidney function, generally by

treating the primary cause of infection. When the disease progresses, it is possible to reach a situation in which the kidneys do not function entirely due to injury[1].

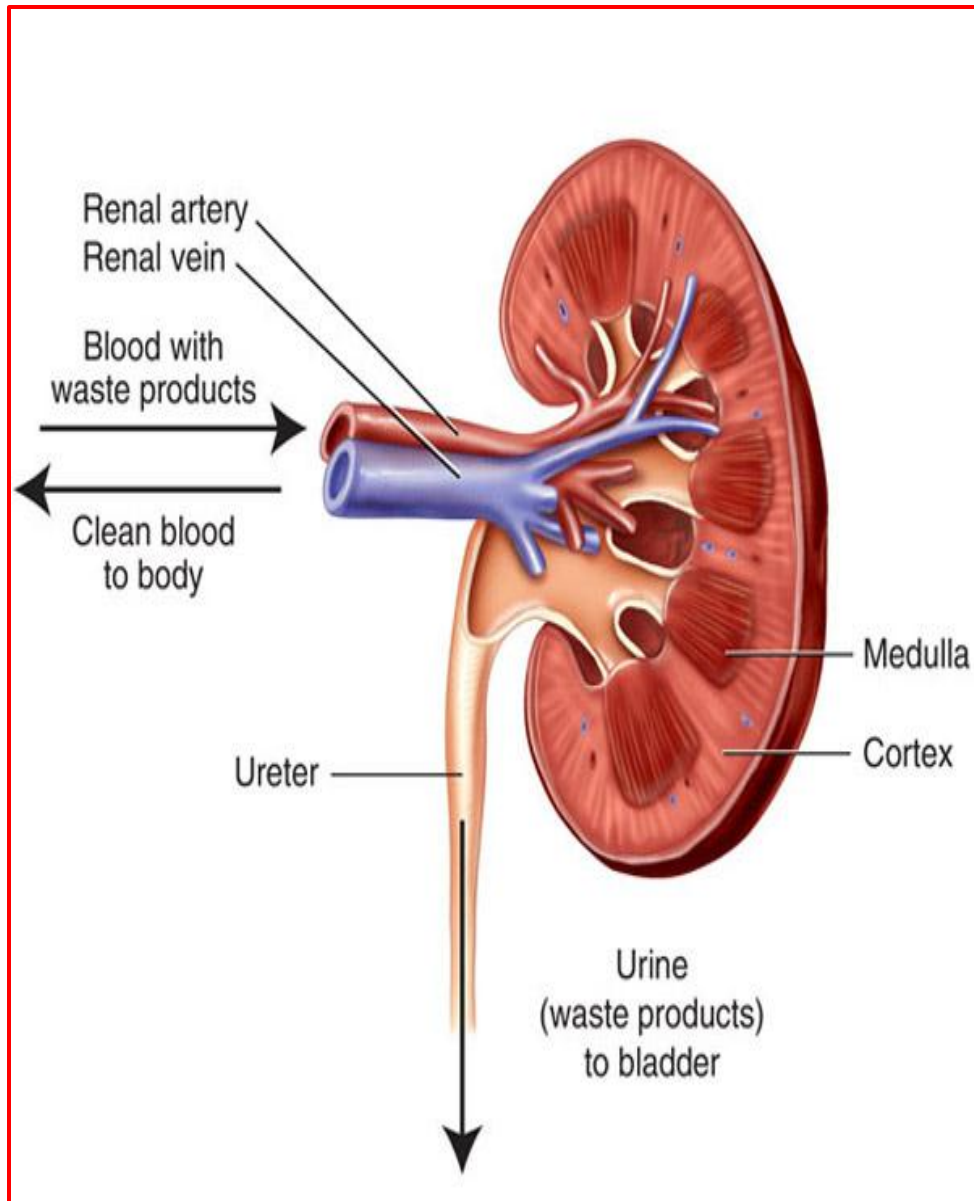


Figure 1: Kidney shape

1.2 Kidney Failure

When the kidney fails to function, or renal function fails, it is called kidney failure. The inability of the kidney to perform its functions affects most parts of the body; the importance of functions performed by the kidneys. Kidney failure is divided into two types: acute and chronic[2].

1.2.1 Causes of Kidney Failure

There are a number of causes and factors behind this disease, mainly as follows:

1-Diabetes is a major cause of kidney failure, especially diabetes mellitus type1,As well as two diabetic pattern and so-calledDiabetes mellitus type2.

2- Smoking and drinking alcohol, as well as eating high-fat foods that cause obesity

3-Causes of glands, especially the prostate gland. The presence of large, medium-sized or small kidney stones

4-Increases the risk of kidney failure in people with certain types of cancer, especially urinary bladder cancer and kidney cancer, and if there is a kidney infection

5-Is closely related to the factor of human life time, where the greater the age of the individual increased the chance of injury due to the stress that affects the college and lead to poor performance.

6-The incidence of various rheumatic diseases such as lupus, hardening of the skin, as well as vasculitis.

7-Causes partial or total occlusion in the kidney artery, which is responsible for providing blood

8- Different blood diseases, especially in people with high and persistent hypertension, as well as high cholesterol[3]

1.2.2 Symptoms of Renal Failure

Accompanying renal failure are many pathological symptoms that help doctors diagnose the disease, which is a decrease in the amount of urine, nausea and vomiting, loss of appetite, feeling of weakness and general fatigue, decreased severity and strength of thinking and analysis, insomnia and muscle contraction[4]

1.2.3 Complications of Kidney Failure

Failure leads to fluid retention. As a result, kidney capacity is severely damaged. This leads to progression of infection and increases blood pressure. Cardiac arrhythmias: When potassium is metabolized in the body, its level may rise to the blood rapidly, and this acts on arrhythmia, and death may occur to the person as a result. Bone fractures: The kidneys modify and balance phosphorus and potassium in the blood. These elements are vital for the growth and buildup of the bones in the body. When kidney dysfunction, it affects

these elements negatively, which may lead to weakening of bones. Fractures may occur when a person is exposed to an accident. Anemia is an important hormone, known as erythropoietin, which activates the bone marrow to produce red blood cells. When the kidneys are affected, the proportion of the hormone decreases. Thus, the number of red blood cells decreases. Therefore, Or kidney failure, is prone to anemia [5].

1.3 Types of disease

1-Acute renal failure

2- Chronic renal failure

1.3.1Acute renal failure

Acute renal failure is a failure of the kidneys to function suddenly, leading to a defect in most organs of the body; the importance of vital functions performed by the kidneys. Acute renal failure can occur within a few hours, or occurs over a few days or weeks. Acute renal failure requires intensive medical care, but fortunately the kidneys can be returned to their proper condition if the medical intervention is timely, adequate and appropriate[6].

The reasons

Acute renal failure is caused by many things, including:

- 1-The kidney is hit or injured.
- 2- The kidney is exposed to inflammation or chemical toxins, such as large amounts of drugs, especially antibiotics, such as methicillin, heavy metals, or cocaine addiction.
- 3-Low blood volume through burns, droughts or severe
- 4-bleeding Obstruction of the urinary tract.
- 5-Uremic hemolytic syndrome[7].

Symptoms

The acute renal failure patient may have one of the following symptoms:

- 1- Urinary scarring.
- 2- The swelling of the body due to lack of disposal of excess fluid, especially in the hands and feet.
- 3- Diarrhea associated with blood.
- 4- General fatigue.
- 5- Nausea and vomiting and loss of appetite.
- 6- Pain in the area of the kidney, i.e. at the ribs.
- 7- Hypertension.
- 8- Pain in the chest or sensation of something pressing on the chest[8]

Diagnosis

Diagnosis can be based on patient symptoms and clinical examination, but several tests are needed to diagnose acute renal failure[9], including:

- 1- Collecting the urine sample for 24 hours.
- 2- Analysis of urine sample.
- 3- Kidney function analysis.
- 4- blood analysis.
- 5- Blood chemistry test.
- 6- Blood creatinine ratio.
- 7- Glomerular Filtration Rate (Glomerular Filtration Rate).
- 8- Creatinine clearance.
- 9- Ultrasonic image of the kidney.
- 10- A cross section of the college

The cure

Many causes lead to acute renal failure, treatment is the treatment of the cause. Since renal failure is a kidney failure to perform its normal functions, the aim of the treatment here first is to save the patient's life if the condition is critical, then try to return the kidney function to its normal functions. Fluids by giving urinediuretics, controlling and limiting fluid entering the patient's body, as well as paying attention to the patient's diet. The patient should follow a diet rich in carbohydrates, low protein, salts and potassium. If any inflammation is found, the patient should be given an antibiotic, and

the doctor can also prescribe an antibiotic to prevent the patient from any possible infections. If there is an imbalance in the ions in the body, the correct method should be followed in the treatment of the uneven ion. For example, if there is an increase in the proportion of potassium in the blood, the patient should be given insulin and calcium. If the amount of calcium in the blood is less than normal, the patient should be supplied with calcium. The doctor may resort to a patient's kidney wash to expel accumulated toxins in the body[10].

1.3.2Chronic renal failure

Chronic renal failure means the progress and continuity of the kidney by losing the ability to function but gradually over a period of time extending to several years. Chronic renal failure symptoms may not appear clearly or clearly except in the later stages. Many causes lead to chronic renal failure, can be divided into three reasons[11].

A-causes leading to kidney inflammation or urinary tract obstruction of the upper part.

B- Causes that block the urinary canal from the lower part.

C-Body diseases, such as high blood pressure, diabetes, and impaired body ions as high calcium levels in the blood.

The reasons

In general, there are many reasons affecting kidney function as the kidney is a vital organ in the human body affects and affected by many members, and the cause of chronic kidney failure is also chronic disease. One of the reasons that can lead to chronic renal failure is[12]:

1-Diabetes types; (1) and (2), especially in patients who neglect their health; diabetes affects the long term on the kidneys.

2- Hypertension.

3-Renal artery stenosis.

4-Kidney disease,such as nephritis.

5-Malaria infection.

6-Drug addiction.

7-Some immunological diseases, such as systemic lupus erythematosus (systemic lupus erythematosus).

8-Congenital deformity of the kidneys.

9-Eat substances that are toxic to the kidneys, such as some medications, such as chemotherapy drugs that treat cancerous tumors, or aspirin.

10-Smoking

Symptoms

Symptoms In the early stages of chronic renal failure, the symptoms on the patient are similar to the symptoms associated with many diseases in the body, and may be the only symptom that indicates the occurrence of chronic renal failure, these symptoms are as follows[13]:

- 1-loss of appetite.
- 2- A headache.
- 3- Dryness in the skin and itching.
- 4- Nausea and feeling tired.
- 5-Loss of weight.
- 6-Itching in the skin.
- 7- Pain in the bones.
- 8-Dizziness and inability to concentrate.
- 9-Shortness of breath.
- 10-Swelling of limbs.
- 11-The smell of the soul.
- 12- Especially in the early morning.
- 13- Anemia.
- 14- Muscle cramps occur.

15- Blood falls with the urine, and urine color is dark.

16-Hypertension.

Diagnosis

The doctor should know the complete history of the patient, with knowledge of the chronic diseases that he suffers from, in addition to knowing the symptoms and duration of the patient of these symptoms and symptoms associated with it, and then through the clinical examination can find the doctor to increase the blood pressure of the patient, And hearing strange sounds when examining the lung and heart of the earphone as a result of the accumulation of fluids, and signs of nerve damage can be found when examining the nerves clinically. Other tests needed to diagnose chronic kidney failure include[14]:

- 1- Blood sample screening.
- 2- Check the urine sample.
- 3- Check kidney function.
- 4- Diagnosis may require biopsy of the kidney, especially if the doctor does not arrive at the diagnosis after all the necessary tests.
- 5- Chest x-rays to confirm that there is no pulmonary edema due to accumulation of fluid.
- 6- Blood chemistry test.
- 7- Blood creatinine ratio.
- 8- Glomerular Filtration Rate (Glomerular Filtration Rate).

9- Creatinine clearance.

10-Ultrasonic image of the kidney.

11-A cross section of the college

The cure

The earlier the disease was diagnosed, the more the kidney function deteriorated. Treatment should be treated first with treatment of the disease causing chronic kidney failure. Anemia should be treated if the blood test indicates an anemia. If blood chemistry tests indicate an increase in the percentage of phosphate in the blood or a lack of calcium in the blood, this should be treated by giving medication to reduce the phosphate ratio and provide the patient with supplements Calcium, if the patient's body retains water, diuretics should be given. Vitamin D levels in kidney patients are often low because it is converted into its active form by the kidneys. Patients should be given vitamin D, if the patient has high blood pressure, This affects More on kidney condition worse. And high blood pressure [15].

1.4 Blood pressure

When the heart beats, it pumps the blood through the arteries to the rest of the body. This force in which the heart pumps blood pressure on the walls of the blood vessels is called systolic blood pressure, which forms the numerator in blood pressure readings, Blood is described by two numbers, number in numeral and number in the denominator, while the place represents blood pressure diastolic

pressure is formed by blood on the walls of blood vessels during the heartbeat between each pulse and other. It should be noted that blood pressure is important to deliver oxygen and food to different parts of the body, Not limited to this only; it is also important for the transfer of white blood cells for immunity, hormones such as insulin, and many other tasks [16].

1.4.1 High blood pressure

Blood pressure is the force of blood pushing against blood vessel walls as the heart pumps out blood and high blood pressure also called hypertension, is an increase in the amount of force that blood places on blood vessels as it moves through the body. Factors that can increase this force include higher blood volume due to extra fluid in the blood and blood vessels that are narrow, stiff, or clogged. Blood pressure test results are written with two numbers separated by a slash. For example, a health care provider will write a blood pressure result as 120/80. A health care provider will say this blood pressure result as “120 over 80.” The top number is called the systolic pressure and represents the pressure as the heart beats and pushes blood through the blood vessels. The bottom number is called the diastolic pressure and represents the pressure as blood vessels relax between heartbeats. Most people without chronic health conditions have a normal blood pressure if it stays below 120/80. Prehypertension is a systolic pressure of 120 to 139 [17].

1.5 Kidney function

The kidneys filter out excess fluid and waste from the blood, a process that relies on healthy blood vessels. High blood pressure can affect the blood vessels in the kidneys, leading to it, causing several types of kidney disease (nephropathy), and the incidence of diabetes and high blood pressure is one of the most common causes of kidney failure, because it can damage the large arteries leading To kidneys and small blood vessels (glomeruli) within the kidneys[18].

1.5.1 Effect of high blood pressure on kidneys

High blood pressure can damage blood vessels in the kidneys, reducing their ability to work properly. When the force of blood flow is high, blood vessels stretch so blood flows more easily. Eventually, this stretching scars and weakens blood vessels throughout the body, including those in the kidneys. If the kidneys' blood vessels are damaged, they may stop removing wastes and extra fluid from the body. Extra fluid in the blood vessels may then raise blood pressure even more, creating a dangerous cycle. High blood pressure is the second leading cause of kidney failure in the United States after diabetes, In addition, the rate of kidney failure due to high blood pressure increased 7.7 percent [19].

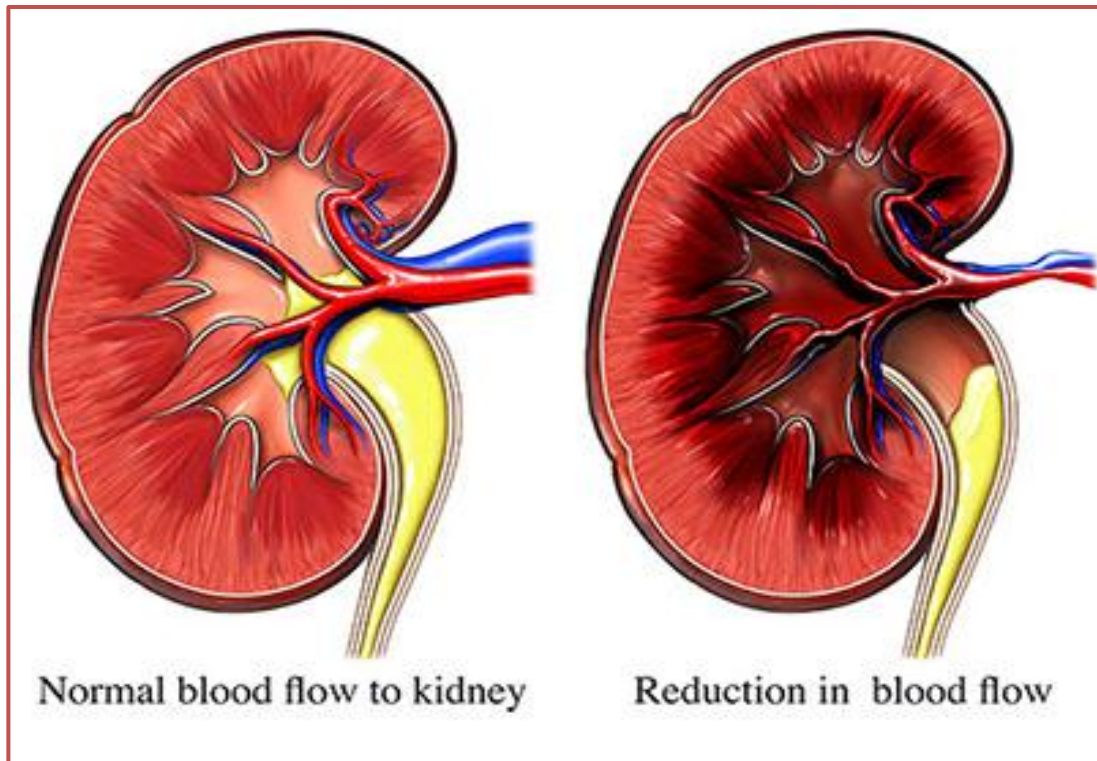


Figure 2: Blood flow in the kidney in normal and abnormal state (unhealthy state)

1.5.2 Damage to kidneys

1-Renal scarring (glomerular sclerosis)

Glomerular glaucoma is a type of kidney damage caused by scarring of glomeruli, glomeruli are small groups of blood vessels within the kidneys that purify blood from waste. Glomerular sclerosis can cause the kidneys to fail to efficiently filter waste, leading to kidney failure

2-Extend blood vessels in the kidney artery

Aneurysm is a bulge in the wall of one of the blood vessels. When this expansion occurs in the artery leading to the kidneys, it is known as aneurysm of the kidney. One of the possible causes is arteriosclerosis, which causes the artery wall to weaken and causes damage and internal bleeding[20].

1.6 Conclusion & Recommendation

1-The kidneys filter out excess fluid and waste from the blood, a process that relies on healthy blood vessels. High blood pressure can affect the blood vessels in the kidney, leading to it, causing several types of kidney disease (nephropathy), and the incidence of diabetes and high blood pressure exacerbate the damage

2-High blood pressure is one of the most common causes of kidney failure, because it can damage the large arteries leading to the kidneys and small blood vessels (glomeruli) inside the kidney

3-Damage to either can cause the kidneys to be unable to effectively purge the waste from the blood. As a result, dangerous levels of fluid and waste can accumulate, and renal dialysis or renal transplantation may eventually be necessary.

4-Renal scarring (glomerular sclerosis)Glomerular glaucoma is a type of kidney damage caused by scarring of glomeruli, glomeruli are small groups of blood vessels within the kidneys that purify blood

from waste. Glomerular sclerosis can cause the kidneys to fail to efficiently filter waste, leading to kidney failure

5-Extend blood vessels in the kidney artery
Aneurysm is a bulge in the wall of one of the blood vessels. When this expansion occurs in the artery leading to the kidneys, it is known as aneurysm of the kidney. One of the possible causes is arteriosclerosis, which causes the artery wall to weaken and causes damage. Internal bleeding threatens life.

6-High blood pressure causes damage to the body before any symptoms appear on the patient, and neglect without treatment, may end disability and poor quality of life or perhaps a severe heart attack

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