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Study of Serum Level of potassium in Patients with Chronic Kidney Disease

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Table of contents

Abstract :

The serum phosphorus test measures the amount of potassium in Blood.

Background :

Your kidneys remove excess potassium from your blood and excrete it in your urine. Chronic kidney disease can reduce your kidney's ability to eliminate extra potassium in your bloodstream.

Aim and objective :

This study aims to evaluate serum level of potassium in patients with chronic kidney disease in IBN_Senaa center of Baquba teaching hospital .

Patients of methods :

The study was under taken on 10 patient with chronic kidney disease.

Results:

When study of serum level of potassium in patients with kidney disease we in chronic state before dialysis and return to normal after dialysis.

Conclusion :

If your kidneys were working ,your kidneys would excrete the

Potassium and keep your blood levels at 3.5-5.5

mg/dl.

INTRODUCTION

What is potassium and what does it do in the body?

Potassium is a mineral that controls nerve and muscle function. The heart beats at a normal rhythm because of potassium. Potassium is also necessary for maintaining fluid and electrolyte balance and pH level.

In order for potassium to perform these functions, blood levels must be kept between 3.5 and 5.5 mEq/L. The kidneys help keep potassium at a normal level.

When is potassium too low or too high?

Low potassium:

Potassium comes from the foods we eat. Healthy kidneys remove excess potassium in the urine to help maintain normal levels in the blood.

Because most foods have potassium, low potassium (hypokalemia) is uncommon in people who eat a healthy diet.

Some of the effects of low potassium include muscle weakness, cramping and fatigue.

High potassium:

When kidneys fail they can no longer remove excess potassium, so the level builds up in the body. High potassium in the blood is called hyperkalemia, which may occur in people with advanced . Some of the effects of high potassium are nausea, weakness, numbness and slow pulse.

For people with stage 5 CKD (also known as end stage renal disease or ESRD), dialysis is necessary to help regulate potassium. Between dialysis treatments, however, potassium levels rise and high-potassium foods must be limited.

Have your potassium levels checked regularly and ask your renal dietitianor doctorabout your potassium results.

How is chronic kidney disease related to high potassium?

Chronic kidney disease increases your risk of high blood potassium levels, known as hyperkalemia. It’s important to monitor your potassium intake if you have chronic kidney disease.

Untreated hyperkalemia interferes with electric signals in the heart muscle. This can lead to potentially dangerous abnormal heart rhythms.

Keep in mind that other factors can increase your risk of hyperkalemia. For example, medications used to treat high blood pressure (beta-blockers and blood thinners) can cause your kidneys to hold on to extra potassium.

Signs of high potassium levels:

Many people notice few if any signs of hyperkalemia. High potassium levels can develop gradually over weeks or months.

Symptoms can include:

- muscle weakness
- abdominal cramps
- nausea
- numbness or tingling
- a weak or irregular heartbeat
- diarrhea
- fainting

Sudden and severe high potassium levels may cause:

- chest pains
- heart palpitations
- shortness of breath
- vomiting

It can be life threatening. Call a doctor immediately if you experience these symptoms.

How to prevent high potassium levels with chronic kidney disease ?

If you have chronic kidney disease, your doctor may recommend limiting high potassium fruits and vegetables to reduce your risk of hyperkalemia.

It's also important to eat these foods as part of a healthy diet to maintain a moderate weight. A registered dietitian can help you find the right balance.

Fruits and vegetables are part of a healthy diet. But you may need to limit those that are high in potassium, including:

- asparagus
- avocados
- bananas
- cantaloupe
- cooked spinach

How can I treat a high potassium blood level?

- **Low potassium diet.** Work with your doctor or a dietitian to create a meal plan.
- **Diuretics.** These medications help expel excess potassium from your body through your urine.
- **Potassium binders.** This medication binds to excess potassium in your bowels and removes it through your stool. It's taken by mouth or rectally as an enema.
- **Medication changes.** Your doctor may change the doses for heart disease and high blood pressure drugs.

(Reference Range)

Normal ring of potassium level in blood

Is between 3.5-5.5 millimoles per liter

125 223 milligrams per liter.

***potassium increase in many disease such as :**

1.hypoaldosteronism
2.Acute kidney failure

* Potassium decrease in many disease such as :

1.vomiting

2. diarrhea

3.starvation

MATERIAL AND METHODS

MATERIALS AND METHODS :

We retrospectively evaluated the laboratory parameters of serum potassium from 10 patients at over four months period from march 2021to April 2021 .The potassium was determined by using Automated Biochemistry Analyzer/ZANDOX LABORATORIS.
A potassium test measures the amount of potassium in a blood sample .Potassium is a charged particle (ion)that contains the mineral potassium .The body needs potassium to build and repair bones and muscles ,help nerves function , and make muscles contract .

RESULTS :

In the present study,10 patients were diagnosed as having chronic kidney disease.

Table (1):Level of potassium in patients before and after dialysis.

Patients	Age (years)	Potassium Concentration (mg/dl) (before dialysis	Potassium concentration (mg/dl) (after dialysis)
Cause 1	50	4.8	4.0
Cause 2	45	4.5	4.2
Cause 3	42	6.6	5
Cause 4	55	5	4.5
Cause 5	54	5	3.5
Cause 6	60	4.3	3.2
Cause 7	63	5.4	4.2
Cause 8	65	5.1	4.2
Cause 9	62	5.8	5
Cause 10	45	5.4	4.3

DISCUSSION

Discussion:

The body need potassium for the contraction of muscles

(Including the heart) and for the functioning of many

complicated proteins(enzymes).

Potassium is found primarily in the skeletal muscle and bone and participates with sodium to contribute to the normal flow of body fluids between the cells in the body .

Body chemicals and hormone such as aldosterone also regulate potassium balance .

Sever hypokalemia may lead to disruption at skeletal mules cell ,particularly during exercise .

The lack of potassium prevent adequate widening blood vessels resulting decrease muscle blood flow cramps and

The destruction of skeletal muscle .

Hypokalemia may also lead to impair the ability of the kidney to concentrate urine ;resulting in excessive

urination (polyuria)excessive thirst (polydipsia)

Loss of appetite ,nausea and vomiting .

Conclusion:

If your kidneys were working, your kidneys would excrete the Potassium and keep your blood level at 3.5 -5.5 mg/dl .
The patients with moderate or severe renal disease have an impaired ability to excrete potassium.

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