

Know Your Test: Urine Analysis – Nonibala Ningthoujam

Urine analysis (urinalysis or routine urine examination) happens to be one of the most commonly ordered tests by clinicians for assessing the urologic conditions of patients and comprise almost one-third of all lab tests. Urine analysis is a simple, inexpensive test that can help detect problems in many parts of the body, including the kidneys, urinary tract, heart and the liver. A urinalysis can help detect many diseases before symptoms occur; early detection and treatment can often prevent serious diseases from getting worse.

WHAT IS A URINALYSIS?

A urinalysis is an examination of a sample of urine that can help find medical problems like kidney diseases, diabetes, liver disease and urinary tract infections.

WHO SHOULD HAVE A URINALYSIS?

Urinalysis is a basic component of any health check-up plan. Everyone, including children should have periodical urine routine examination. It is especially important for people who have an increased risk for kidney disease to be tested for protein in their urine. Persistent presence of protein in urine is an early warning sign of kidney disease. A person who has diabetes, high blood pressure, or a family history of kidney diseases should have a urinalysis.

COMPONENTS OF URINALYSIS

A urinalysis has three main parts:

1. **VISUAL EXAMINATION** of a urine sample for colour and clearness. Presence of blood may make urine reddish. An infection may make it look cloudy.
2. **A DIPSTICK EXAMINATION**, which usually uses a chemically treated strip to check for the following:
 - **pH:** A measure of the amount of acid in the urine. An abnormal pH may be a sign of kidney stones, urinary infections, chronic kidney disease or certain disorders that affect growth and development in children.
 - **Protein:** When one has kidney problems, protein leaks into the urine. Persistent protein in urine suggests that the kidney's filtering units have been compromised.
 - **Glucose (sugar):** Presence of glucose is usually a sign of diabetes. In children, sugar in urine may sometimes be related to certain growth disorders.
 - **Bacteria:** Its presence along with white blood cells (pus cells) are signs of infection. Bacteria without white blood cells may indicate bladder disease.
 - **Bilirubin:** Its presence may be a sign of a liver disease.
 - Other parameters include bile salts, ketone bodies, etc.
3. **MICROSCOPIC EXAMINATION** of the urine sample helps detect:
 - **Red blood cells** which may be a sign of kidney diseases that damage the filtering units of the kidneys, allowing blood cells to leak into the urine. Blood in urine may also be an indicator of kidney stones, infections, bladder or other blood disorders.
 - **White blood cells (or pus cells)**, which are a sign of an infection or an inflammation in the kidneys, bladder or another area.
 - **Bacteria, or germs**, which are signs of an infection in the body.

- Casts, which are tube-shaped forms made of protein, and may have red or white blood cells or other cells inside. Casts form because of certain kidney diseases.
- Crystals, which are formed from chemicals in the urine. These sometimes develop into kidney stones if they become large.

PREPARATION FOR THE TEST

One can drink and eat normally before the test. However, one may need to fast for a certain period of time if one is having other tests that require fasting. The urine is collected in a clean, sterile container. Ideally, the morning sample is the best, but a random sample may also be used. The urine to be tested should be as fresh as possible.

DRUGS AFFECT RESULTS

Many drugs and vitamins can affect the urinalysis. For example, vitamin C and antibiotics have the potential to affect the urinalysis results. Fever and heavy exercise can also alter the results.

PRESENCE OF PROTEIN AND/OR BLOOD IN URINE

If the urinalysis shows the presence of protein and/or blood, one may need further tests to confirm if one has kidney or urinary tract diseases. Persistent presence of protein in urine is a sign of chronic kidney disease. Many health problems that affect the kidneys, such as diabetes and high blood pressure, also affect the heart and blood vessels. Presence of protein in the urine may be a sign that the blood vessels have already been damaged by these diseases, and organs such as the heart and the kidneys have been affected.

RESULTS

Urinalysis alone does not provide a definite diagnosis. Depending on the reason one's doctor recommended this test, abnormal results may or may not require follow-up. The doctor may need to evaluate the results along with those of other tests, or additional tests may be necessary to determine next steps.

(The writer is Junior Biochemist, BABINA Diagnostics, Imphal)