INSIDE RADIOLOGY

Nuclear Medicine Renal Scan

Consumer Information

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What is a Nuclear Medicine Renal Scan?

The kidneys filter the blood to remove waste substances such as urea (a nitrogen compound) and salt. The body discharges these wastes mixed in water as urine. The fluid is collected in the kidneys and discharged through the ureters which join the kidneys to the bladder. The top of the ureter is called the renal pelvis and this joins the kidney to the ureters.

In a Nuclear Medicine (NM) Renal Scan, images are made of the delivery of fluid into the kidneys via the bloodstream, concentration of wastes in the kidney and excretion or flow from the kidneys through the ureters and filling of the bladder.

A Nuclear Medicine Renal Scan can be performed with 2 different substances - DTPA or MAG3. DTPA is the radiopharmaceutical used in a DTPA Renal Scan, but sometimes the nuclear medicine specialist will decide that another radiopharmaceutical called MAG3 should be used. These radiopharmaceuticals are similar, but MAG3 gives significantly better images in some patients, particularly very young children and those patients with poor kidney function. The descriptions and explanations below for a DTPA renal scan apply also to a MAG3 renal scan. A Nuclear Medicine DTPA or MAG3 Renal Scan is performed to look at the blood supply, function and excretion of urine from the kidneys. The test can find out what percentage each kidney contributes to the total kidney function. A DTPA Scan may also be undertaken to evaluate:

- Renal tubular function and perfusion (how the body fluids circulate through the kidneys)
- Renovascular hypertension (high blood pressure in the arteries of the kidneys)
- Renal artery stenosis (narrowing of the arteries that take blood to the kidneys)
- Renal tubular obstruction and trauma or damage (blockage or interruption of the ureters)
- Renal transplant perfusion and function

How do I prepare for a Nuclear Medicine Renal Scan?

It is important, prior to having the scan, that you have plenty of fluid to drink and are well hydrated. If the study is being done to evaluate renal hypertension or renal artery stenosis, some blood pressure medications should be stopped 4-7 days prior to the examination.

Please speak to your doctor or ring the nuclear medicine department of the hospital or private radiology practice where you are having the scan for instructions regarding preparation for the scan.

If you think you may be pregnant or are breast feeding you must inform your doctor or specialist who is referring you for the DTPA Scan and the radiology staff where you are having the DTPA Scan. They will discuss with you any need to stop breast feeding and minimise nonessential contact with your baby for a short time.

What happens during a Nuclear Medicine Renal Scan?

On arrival, you will be measured for your height and weight and also given some water to drink prior to the scan to make certain you are well hydrated.

For the DTPA Scan, you will be lying down on the scanning bed, with the gamma camera under the bed. It is important to keep still during the test as any movement of the body will blur the images and give poor scan results. The imaging itself does not hurt.

A small injection in a vein will be given, usually in the arm. A cannula (thin plastic tube) will be inserted into your vein and will stay in the vein for the duration of the test. Apart from the initial prick this should not cause you any discomfort.

Through this cannula the radiopharmaceutical is injected. This can be detected by the gamma camera and will provide clear images of the kidneys. After about 15 minutes of scanning, you may be given a second injection through the same cannula of a diuretic called frusemide (Lasix). This causes the kidneys to make more urine by decreasing the amount of water that the kidneys resorb as part of the filtering process. There is also an increased flow of urine through the ureters which makes any obstruction of the ureters easier to see.

As with any drug there is a small chance of an allergic or adverse reaction. Please discuss this with your doctor or with the medical staff performing the examination if you have any queries or concerns. The frusemide will help your kidneys to work harder, so your bladder will fill faster. At the end of the scan you may be asked to go to the toilet and empty your bladder, then return for a further 2 minutes of imaging. The cannula is removed before you leave the department.

Are there any after effects of a Nuclear Medicine Renal Scan?

There are no after effects of a DTPA Scan. You will not feel any different.

If a dose of a diuretic (frusemide) is given to cause an increased flow of urine, you may feel thirsty and need to drink plenty of fluids for the rest of the day so that your body does not dry out and you become dehydrated. You may also need to visit the toilet more often to empty your bladder.

How long does a Nuclear Medicine Renal Scan take?

The test itself will take approximately 30 to 60 minutes. The time varies because the rate at which the kidneys function will differ for each individual.

What are the risks of a Nuclear Medicine Renal Scan?

There are no known associated risks involved in the DTPA Scan itself.

The test involves a small dose of ionising radiation which is relatively small and similar to many other routine medical imaging tests. For more detailed information (see *Radiation Risk of Medical Imaging for Adults and Children)*.

If you are pregnant or breast feeding, please inform your doctor before booking the scan. Some of the medications that are used in nuclear medicine studies can pass into the mother's milk and to the baby. You may be asked to discontinue breast feeding for a short time after the scan and will need to express from both breasts. Please discuss with the nuclear medicine physician or technologist when feeding can resume and if you need to limit contact with your baby for a short time.

What are the benefits of a Nuclear Medicine Renal Scan?

This test provides information on the blood supply, function and excretion of urine from the kidneys.

A DTPA Scan can help your doctor assess how each of your kidneys is working and find out what percentage each kidney contributes to the total kidney function. It is important for your health that your kidneys are functioning properly.

Who does the Nuclear Medicine Renal Scan?

A nuclear medicine technologist will give the injection, perform the scan and process the images. A nuclear medicine specialist will review the images along with your medical history, and provide a written report for your referring doctor. See *Nuclear Medicine* for more details about these health professionals.

Where is a Nuclear Medicine Renal Scan done?

A DTPA Scan is done in a nuclear medicine department of a hospital or a private radiology or nuclear medicine practice with nuclear medicine facilities.

When can I expect the results of my Nuclear Medicine Renal Scan?

The time that it takes your doctor to receive a written report on the test or procedure you have had will vary, depending on:

- the urgency with which the result is needed
- the complexity of the examination
- whether more information is needed from your doctor before the examination can be interpreted by the radiologist
- whether you have had previous X-rays or other medical imaging that needs to be compared with this new test or procedure (this is commonly the case if you have a disease or condition that is being followed to assess your progress)
- how the report is conveyed from the practice or hospital to your doctor (in other words, email, fax or mail)

Please feel free to ask the private practice, clinic, or hospital where you are having your test or procedure when your doctor is likely to have the written report.

It is important that you discuss the results with the doctor who referred you, either in person or on the telephone, so that they can explain what the results mean for you.

Please note:

This information is of a general nature only and is not intended as a substitute for medical advice. It is designed to support, not replace, the relationship that exists between a patient and his/her doctor. It is recommended that any specific questions regarding your procedure be discussed with your family doctor or medical specialist

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