

Contrast media used in intravenous urography



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Introduction

Intravenous urogram is also known as intravenous pyelogram. It is a radiology procedure to view the urine system including kidney, bladder and ureter. Intravenous urogram is roughly examination allows the doctor to see structures like the cortex, renal, calyceal, renal pelvis, pyeloureteric junction, bladder and ureteric drainage. Among the problems that can be examined in this way is a bladder infection, kidney infection, bleeding in the urine, tumor, injury to the urinary tract after a severe external injuries, and several other related diseases. To carry out this examination, special materials required for these structures can be seen in the x-ray images. Special materials that are the contrast media.

Contrast agent is injected into a vein in the body and it will be distributed throughout the body via the bloodstream, before it is eliminated by the kidneys. Often the contrast agent is injected through the median cubital vein, and images of some of the kidney resulting contrast image synthesis. There are several types of projections used in the trial of IVU. Projections are as full length KUB, KUB on your belly, cross-dim range reduced the renal kidney and upper ureter, oblique to the kidneys, bladder anteroposterior angle of 15 degrees to prevent bladder covered with pubic symphysis and the bladder oblique. Contrast agents can be viewed directly on the kidney immediately after injection and is known as nephrogram.

This shows the contrast agent by glomerular filtered before reaching colyceal system. It is important to examine the renal outline, and can detect tumors, cysts or cortical scarring. He also produces initial information about the sign

of kidney. After 5 minutes of an injection is given, calyces will be filled with contrast agents, which will then move down the ureter to fill the bladder.

Contraindications

Contraindications that should be known by the radiographers before any procedure is as renal colic, renal calculi, abdominal pain, abdominal surgery at the latest, after the patient gave birth, and the replacement of the kidney. This contraindication is important to avoid complications that may occur.

Patient preparation before during the examination

Patients are not allowed to drink a few hours before urogram examination. Patients are also asked to take a laxative to make sure everything is clean from the dirty material. If the patient is taking any medications such as blood pressure medicines, patients can continue taking these drugs unless prohibited by a doctor. If the patient is pregnant, the patient should be told radiographers working.

Intravenous urogram was not performed on patients who are pregnant unless certain emergency cases. Patients will be asked to sign a document. This document is carrying all the risks, benefits and all the complications that can occur. This allows the patient to understand all the procedures of this inspection. If the patient agrees to assume all risks and understand the procedures established, the patient can sign the documents and procedures will be carried out.

Precautions before use of contrast media in intravenous urogram

The reaction cannot be expected to contrast media, and all patients should be cared for and tidy during the procedure. Of interest to examine the patient before performing any procedure should not be taken lightly. This guide will allow the radiographers to carry out the procedure. Radiographers should know the signs of the various reactions that occur. There are many steps that must be taken before, during and after the use of intravenous contrast media. The first, radiographers must know the patient's health history. Secondly, if the patient is a patient who had a high risk, radiographers must use low-osmolar contrast media.

Among patients with high risk of the asthma, epilepsy, diabetes, and others. Next, batch number and expiry date should be examined in contrast media. In addition, radiographers must ensure that the contrast agents in body temperature. Radiographers should also check whether or not the package has disterile. Prior to this contrast media marginal, they should know the correct procedures, checking emergency equipment and know how to use these tools, and check the appropriate volume of contrast, the dose and the correct procedures.

Intravenous urogram procedure

Urografi intravenous test was initiated by asking the patient to remove clothing and wear a hospital gown provided. Patients are also asked to remove all jewelry that was found in patients. Then the patient will undergo blood tests to check whether the patient's kidney function is good or not.

After that, the patient will be laid on stretchers or x-ray table. Then, the radiographers will take an x-ray images before contrast medium injection. Injection of contrast media on the patient through an intravenous. An intravenous cannula (IV) is inserted through a vein in the patient's arm or hand. Then, the contrast medium injected.

X-rays are taken at the times specified. Several sequences of the film will be done according to the test. X-ray frequencies depends on the patient's kidneys to menurus contrast media. Normally, the kidneys would normally filter the contrast medium within 5 to 10 minutes. Pesalit should remain a rest between each x-ray is taken. Another imaging technique will be used in conjunction with intravenous urogram called kidney tomogram. This is the imaging pictures of patient kidney in the slice condition.

Nurses will assist the radiographers to check the patient's pulse, respiration and blood pressure continuously. Before the last x-ray is taken, the patient will be asked to empty their bladder. This is to see patients when the bladder is empty. Intravenous urogram procedures completed when all the tracks clearly show the urine pictures x-ray. The entire procedure takes about one hour.

Procedure during injection

During injection, radiographers must know where the Radiologist or a doctor may be contacted. In addition, radiographers must constantly monitor the respiration rate, blood pressure, color and level of patient awareness.

Procedure after the injection

Radiographers should remain with the patient not less than 15 minutes. when the inspection was made, check whether pesalit can return home safely or not. do not allow patients to return if there are any complications.

Film sequence

Intravenous urogram test is one test that will need to use a lot of film. This is because the procedure performed and requires much more structure posisisi patient's body to be x-ray. Preliminary film is the first film to be taken to the test. Preliminary film using a film of size 14 x 17 inches (43 x 35 cm). The film will be placed under the patient. the patient would lie with the projection AP abdomen to include the symphysis pubis and diafgram border. This is to check the patient's abdomen was doing inventory and to disclose any case of calcifications of the renal tract. X-ray beam was centered in the middle of the level of iliac crest. Additional X-ray taken to determine any akkan opacities present in the patient's body. 35 degrees posterior to the renal area. Preliminary objective was to examine the patient's colon and bowel preparation to see patients. It also seeks to identify the renal position to determine the exposure factors. It is also to look at problems in kidney patients.

Then radiographers will take x-ray film, called immediate. The film will be taken immediately after injection of contrast media. Film size 10 x 17 inches (24 x 30 cm) was used to film this immediate. X-ray beam centered between the lower costal margin and xiphisternum. Patients will be in a state of AP in the area to see renal patients kidneys when contrast is injected. It aims to

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show nephrogram, renal parenchyma is opacified by contrast medium in patients with renal tubules. The aim is to show the film immediate renal parenchyma to show nephrogram phase. It is also to examine the size of kidney patients will be expanded from the original size after injection of contrast.

After 5 minutes of contrast media injected in patients, radiographers will take an x-ray. X-ray called a 5 minute film. Size of film measuring 14 x 17 inches (35 x 43 cm) used for this film. Patients in the supine AP and AP projections for renal area. After 5 minutes of completion of the injection of contrast medium to patients, taking X-rays done full KUB shows the urinary system. Taking pictures of x-ray taken at this time to determine the patient's bowel movement is symmetrical and does not need to modify the technique for assessing needs. For example, another contrast medium should be injected when the kidney is less opacification. The purpose of a 5 minute film is to compare the flow of contrast agent by the two sides of kidney patients. It is also to see the patient's pelvis system. 5 minute film is also to examine the excretion of symmetry in both kidneys.

After that, the film is taken 15 minutes. This film is so named because the x-ray is taken after 15 minutes the patient is injected with contrast media. Film size 10 x 12 inches (24 x 30 cm) used for this film. Taking x-ray done 15 minutes after injection (10 minutes after the film 5 minutes). The aim is to see the renal calyx system more clearly, the pressure is on this film series with kolimasi exposure on renal kawaswan. Use of pressure rings are not needed when the patient shows any indication of renal calculi and in patients

after surgery. This is to avoid injury to the renal patient. Perform head-down position when the pressure rings are not used.

Then, release film taken after the 15-minute film. Size of film measuring 14 x 17 inches (43 x 35 cm) used for this film. Taking x-ray done after opening the pressure ring or for patients who do not use the pressure ring, the patient should be changed from the head down position to a reclining position. The entire urinary system and bladder area should look at this film series.

The last film was taken in a test called the film post - void / micturate. Size of film measuring 14 x 17 inches (43 x 35 cm) used for this film. Taking x-ray performed after the patient's bowel to empty the urinary bladder. The purpose of the film post - void / micturate was to assess the patient's residual urine after urination. It is also to see the ability to clear the patient's ureter bladder. It also showed no bladder problems such as tumors and divertikulum.

Risk of Intravenous urogram examination

Intravenous urogram is always carried out without any risks or problems. This examination is a safe examination. However, to ensure that all the conditions are really safe and to avoid any complications, patients should be caring and always sensitive to side effects. The patient is exposed to radiation. Rate of radiation received by patients was similar to the radiation received by all the environment for 14 months.

If the patient is pregnant, this examination cannot be done. This is because the fear of radiation can have adverse side effects on the content. There are <https://assignbuster.com/contrast-media-used-in-intravenous-urography/>

also some potential side effects experienced by patients after the inspection but it is very poor. If there are any side effects, patients may feel hot or itchy and uncomfortable in the mouth after receiving an injection of contrast media. It only felt by the patient for a few minutes.

Patient care

Care for patients after intravenous urogram examination is essential. This is due to revive a patient of any effects after the test. Radiographers should ensure that patients in stable condition. Slowly open the needle and clean the place involved. Give an explanation to the patient for follow-up care after testing is completed. Ask patients to change their clothes after the completion of the test. Radiographers should also advise patients to drink sufficient water to remove the contrast media from the patient's body.

Complication

Complications may occur during or after the inspection. Allergic reaction or allergy to contrast media is a major risk even kidney damage could be one of the complications. If the patient has allergies to iodine, contrast material, has a problem hives, difficulty breathing, the patient should immediately notify the radiographers. Detailed information and the patient's medical history should be known in order to avoid any complications that may occur.

CONTRAST MEDIA

Introduction

Clinical diagnostic radiology has been developed not only in terms of equipment and techniques used, but the contrast media allows visual structure and internal organs can be seen in more detail. A dose of contrast

media used in x-ray usually contains 2000 times as much iodine content of iodine in the body. However, iodine contained in the contrast media will be removed in a natural system immediately. Generally no side effects occur. Selection of contrast media has always been a problem, but actually it depends on the radiologist itself. To make rational decisions about the choice of contrast media have a high understanding of the principles of physical and physiological needed.

Why contrast media is necessary?

The level of attenuation of all the patients affected by the atomic number of factors involved. If there is such a large density difference between the heart muscle and the air in the lungs, the lines of the structure can be seen on radiographs as a natural contrast exists. Similarly, if there are differences in the number of atoms between two tissues like muscle and bone. Muscles consist of low atomic number instead of bone consists of calcium and has a high atomic number of lebiih. Line structure can be seen because of the natural contrast. But if the two organs that have the density and atomic number is not much difference, it is not possible to distinguish the structure of the organ in the radiograph because the contrast does not exist naturally.

So, no way we could see the blood vessels in an organ or internal structure of the kidneys without the use of other substances or change the contrast. Two important factors can be changed is the density and atomic number of an organ structure. Number of atomic structure is hollow as the blood vessels can be added or promoted by filling the liquid has a higher atomic number such as iodine contained in the contrast media.

Type of contrast media

There are several types of contrast media used. Contrast media can be differentiated based on the modality used. Although there are various types of contrast media, the type often used is based on its x-ray attenuation and magnetic resonance signals. Contrast media can be divided into two positive contrast media and contrast media is negative. Contrast material is used to enhance x-ray attenuation. Positive contrast media materials give the white in the image.

While the media are negative contrast material was used to portray the image black. Gadolinium is used in magnetic resonance signal as MRI contrast agents. Gadolinium enhance the quality of MRI scans. There are two types of positive contrast material is used in an x-ray of barium and iodine. There are many types of existing iodine contrast media with different viscosities, osmolariti and iodine content.

a) Non-iodine contrast media

Medium contrast material is a white powder that was insoluble. The powder is mixed with water and a few other extra components to make a mixture of contrast material. This material is generally only used in the digestive tract. Normally this type of contrast medium ingested or given by enema. Upon examination, this material will be removed from the body with dirty materials. Non-iodine dimer is the best choice for a low toxic content. However, non-iodine dimer has a higher price.

b) Iodine contrast media

Materials iodine contrast media is soluble in water and is not harmful to the body. Contrast materials are widely sold as a solution of clear, colorless liquid. Concentrations are usually expressed in mg / ml. Iodine contrast material is used almost in every human body. Iodine contrast media is divided into three. Contrast media containing iodine oil, iodine contrast media and water-soluble contrast media are not water soluble.

Microbubbles were a contrast agent used to help sonographic echocardiogram. These bubbles of nitrogen and supported by proteins, lipids or polymers. Decrease in density between gas and liquid surrounding the bubble and will reflect back ultrasound. This process causes the resulting image can be seen clearly.

Effect of contrast media

Contrast media are safe to use, but some health problems associated with some of the contrast media. Reactions vary about the danger of death, with approximately 0.9 deaths per 100 000 cases. These factors are invited to this dangerous reactions, including a strong allergy, asthma and heart disease bronchiol. There are many misconceptions that exist among the professionals is the contrast between the media associated with allergic reactions to seafood because they both have the iodine content in it.

However, few studies have been made and indicated that while iodine is a substance often used in contrast media, but it was not the cause of the allergy but it is better for patients with a history of other allergies. However, there are also some patients reactions to contrast media. Examples of such reactions are nausea or vomiting, feeling hot all over the body, while itching,

sneezing, sometimes shortness of breath and hypotension. Actual reactions depending on the patient's own resistance.

Way of contrast media given

1) Through Oral

Contrast media is given by mouth by drinking or swallowing of contrast media. Normally it is barium sulfate. Giving oral contrast media will affect where the stomach will look white on x-ray film. Contrast media containing barium sulfate is not harmful. Barium sulfate is excreted out in a day or two days. In all cases, the use of contrast media is not advised for pregnant women because of lack of conclusive evidence about how safe contrast media in pregnancy. However, if this type of examination can save lives, the risks should be weighed again on a case-by-case.

2) Through Anal (small intestine and large intestine)

Contrast media through the rectum or anal granted. Contrast media is inserted into the rectum with the help of rectal catheter. Rectal contrast media through which this will affect the large intestine will look white on x-ray film. In this way, the various organs or structures can be viewed and studied.

3) Through intravascular

Contrast media is given by intravascular injection. Often, the material used is iodine-based contrast media. Most patients can be detained and given an injection of contrast media quickly removed from the body without adverse side effects. Iodine-based contrast media caused a warm feeling when

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injected. Sometimes patients may feel sick after receiving the injections. Therefore, patients are always advised not to take any food before any radiological examinations requiring contrast media.

Rarely, iodine-based contrast media may cause an allergic reaction. Gadolinium contrast media are also given in the form of magnetic resonance imaging during the injection. Contrast medium is working to enable the organs that have good blood supply appears white on the MRI images.

Selection of contrast media

Radiologist choose the type of contrast media based on experience and knowledge. They choose the type of contrast media depends on the patient's condition. To make decisions, various factors including clinical factors and financial factors are also considered to assist in making a selection. Royal College of Radiologist provide some guidance. Among the patients who are at high risk of reaction. Among them are children, the elderly, diabetics, patients suffering from asthma, and patients with allergies. In this group, 25% of patients were recommended for the test.

How the contrast media used

There are a number of radiological examinations using contrast media. Volume, different types of contrast media for each patient depending on the type of inspection and the need Radiologist.

Angiography

Angiography is the examination carried out to examine the blood vessels.

Selection of arteriography and venography depending on what type of blood vessels to be inspected. Either vein or artery.

Arteriography

For arteriography, the contrast media through the catheter used in the arteries. Blood flow will lead to the loss of contrast media. With this, the image of the artery can be seen in organs or in other parts division.

Venography

For venography, contrast medium injected into the vein and vein travel throughout the body can be seen. The greater the size and number of veins in the body, the more positions that need to be made by radiographers to obtain images of veins throughout the body. Normally venography performed to confirm the patient has deep vein thrombosis. In the leg, venography was also performed on the organs in the body by inserting the contrast medium into the organ via the venous catheter.

Intravenous urography (IVU)

Intravenous urography is a check for a urinary tract. When an intravenous injected, most of the contrast media to be secreted by the kidneys. This inspection is performed to check whether there is any kidney stones or other kidney problems.

Computer tomography (ICT)

An electronic, ICT has a better contrast sensitivity. But it cannot create a contrast which does not exist naturally. A total of 43% of CT procedures using contrast media. CT is widely used in the body but are often used for examination of neurons as the brain and spinal cord. It is also used for examining the chest, abdomen, and pelvis. It is also useful for examining the tumor.

Myelography

Spinal cord and major nerves can not be displayed by x-ray without the use of contrast media. Spinal cord and other nerves can be displayed using MRI. Images can be produced if the contrast medium injected into the cerebrospinal fluid surrounding the spinal cord. Contrast media have been created specifically for this examination. The majority of myelography made to examine the lumbar to confirm any clinical problems such as intervertebral disc out of the home. However, CT and MRI now has replaced myelography as the research lumbar. Myelography with CT scan was used to investigate spinal cord and cervical areas.

Inspection of other

There are several other examinations in which contrast media are needed. As an example of the contrast medium is introduced to the structure of such joints to study the anatomy and pathology. Iodine containing contrast media when given orally, it can be used to examine organs such as the small intestines.

Responsibilities of radiographers

Radiographers should be sensitive to the needs of patients are willing to help and should have a responsible attitude. Always willing to help the state to face and deal with an emergency procedure, especially when contrast media. Clearly and accurately describes the procedure of contrast media using language easily understood by patients. Cooperation of the two parties to produce a successful procedure.

Conclusion

In conclusion, much needed in the media kontas produces images that are clearer and brighter because it has the properties of radio-opect less penetrated by x-ray. It will also be a dangerous to the patient if the radiographers to take it easy patient safety.