NHS
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Radiation risks from your nuclear medicine lung scan (VQ scan) and CT Pulmonary Angiogram (CTPA)

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At University Hospitals Birmingham, pregnant patients who may have a possible blood clot in their lungs (pulmonary embolus) are advised to have a chest X-ray as their first test.

If the chest X-ray shows no cause for the symptoms and clear lungs, then the next best test for a pulmonary embolus is a nuclear medicine lung VQ scan, also known as a nuclear medicine lung scan. If a VQ lung scan is not possible, then a CT pulmonary angiogram (CTPA) can be done, however this can be less reliable.

Nuclear medicine lung VQ scan

What is a nuclear medicine lung scan?

A lung scan, or ventilation-perfusion (VQ) scan, is a nuclear medicine scan that uses small amounts of radioactive material, known as a radiopharmaceutical, to look at air and blood flow in the lungs to check whether there is a blockage in the blood supply to part of your lungs caused by a blood clot. For pregnant patients, we will just carry out the part of the scan which looks at the blood flow. This will be half of the normal dose of radioactive material. On some occasions, the radiologist will want more information, and you may be called back for further images where we look at the air flow to your lungs.

A blood clot in the lungs is rare but can be potentially fatal if left untreated. Your consultant has decided that this is the safest test for this serious condition and that the benefit of the test outweighs the risk from the small radiation dose. This test will help your doctor to decide whether you need to take a drug to thin your blood to treat/prevent the blood clot.

How is the test done?

A machine called a gamma camera will take pictures of your lungs. You will be injected with a radioactive dye, usually into a vein in your arm, to show the blood supply in your lungs. This will take approximately 15 minutes and you will be asked to breathe gently and keep still so that the pictures produced are clear. If there is movement that causes blurring in the image, the scan may need to be repeated.

As stated earlier, you may be required to return for further imaging to look at the airflow to your lungs, and this will be carried out on the following day. To test airflow to your lungs, you will be asked to breathe in a radioactive gas. This will be a reduced radiation dose and you will be scanned for approximately 30 minutes.

A nuclear medicine camera

CT pulmonary angiogram (CTPA)

What is CT Pulmonary Angiogram (CTPA)?

CTPA stands for computerised tomography pulmonary angiogram. This is a specialised scan of your lungs by a scanner that uses X-rays to create images.

How is the test done?

You will have a cannula (a narrow plastic tube) inserted in a vein in your arm and will be taken into the CT scan area where you are asked to lie on a stretcher. There is a donut-like ring which is the scanner surrounding the stretcher and you. You will be asked to stay still. You will be attached to a small syringe from which dye is injected into a cannula.

The scanner then will start taking pictures and the dye is injected into the cannula. This helps us to see the blood vessels in the lungs when pictures are taken.

A CT scanner

Risks of radiation to me and my baby

If you are pregnant and need a scan, both types of scans will give you and your baby a small amount of radiation. Radiation can sometimes damage cells, and after many years, this could lead to cancer.

We are all exposed to small amounts of natural radiation in our environment - this is referred to as natural background radiation. Below is a breakdown of the approximate radiation doses you will receive from each type of scan compared to natural background radiation. At our hospital the Q scan radiation dose is much lower than the CTPA dose.

1. A CTPA scan: About 1.7 years of natural background radiation
2. A Q (Perfusion/blood flow) scan: About 3 months of natural background radiation
3. A VQ scan: About 4.5 months of natural background radiation

Your baby receives less radiation than you during both the CTPA and VQ scans. The amount of radiation that your baby will receive will be equal to 2 weeks or less of natural background radiation – a tiny dose.

If I am breastfeeding, can I still feed my baby?

Before the scan you can continue breast feeding normally.

CTPA

You can continue as normal with your breast feeding afterwards and no precaution is needed. In this test the radiation comes from the scan and not the injection.

V/Q scan

After the scan, it is recommended that you don't breastfeed your baby for up to a maximum of 14 hours. This will be explained to you by clinical Nuclear Medicine staff.

Please use the space below to write down any questions you may have and bring this with you to your next appointment.

How did we do? ☺ 😐 ☹

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Imaging
Queen Elizabeth Hospital Birmingham
Mindelsohn Way, Edgbaston
Birmingham, B15 2GW
Telephone: 0121 371 2000

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