



# Paget's Disease – Investigations Explained

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September 2011  
Review: September 2013



## **PAGET'S DISEASE- SCANS, X-RAYS AND TESTS EXPLAINED**

### **What is Paget's Disease?**

- Paget's disease is a chronic bone disorder that becomes more common after the age of 50 when it occurs in approximately 3% of the population.
- It is caused by an increase in the activity of cells in bone, which results in a disorganised bone structure that is weaker than normal.
- Symptoms range from none to pain, possible fracture and deformity at affected sites in the skeleton
- Once diagnosed the disease can be controlled effectively by medication.

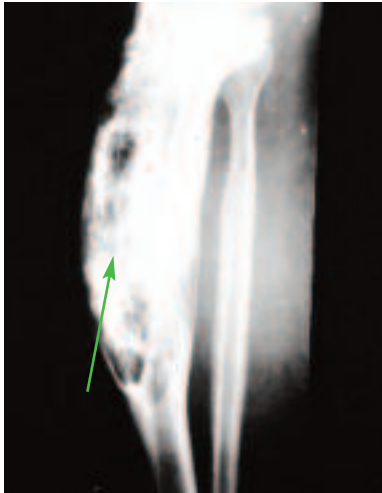
### **How is Paget's Disease diagnosed?**

- X-ray
- Isotope bone scan
- Blood test

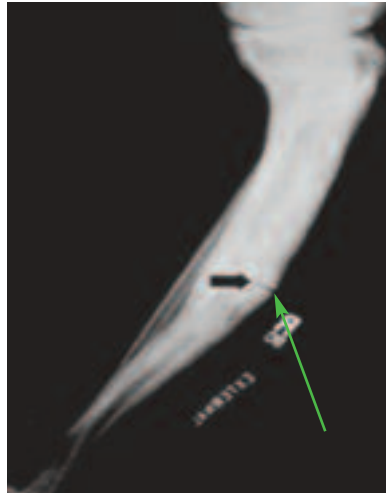
### **What does an x ray show?**

- An x-ray of a bone may be performed if Paget's disease is suspected but it is often seen by chance when an x-ray has been undertaken for another reason.
- An x-ray will show the presence of Paget's disease in a specific bone only and will not give any information about other sites in the skeleton that may be affected.
- The x-ray picture will vary depending on the severity of the disease but it is usually possible to see increased density and sometimes change in the shape of bone.

- Fissure fractures (cracks) that can occur along the edge of deformed bone.
- Complete fracture through an affected bone.
- May also show wear and tear in adjacent joints.



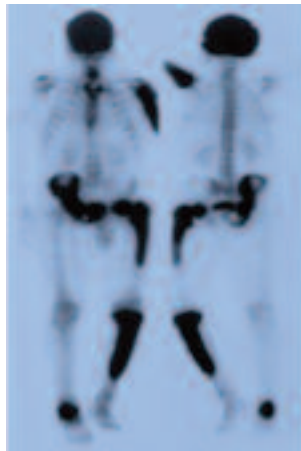
Advanced Paget's Disease in shin



Fissure fracture in shin

### What is an Isotope Bone Scan and what information does it provide?

- Commonly performed to determine the extent and activity of the disease.
- Involves an injection into a vein of a small and safe amount of a mildly radioactive chemical called an isotope. This travels to the bones via the bloodstream and after about 3 hours a "gamma" camera scans the skeleton and produces an image.
- Abnormal bone absorbs more radioactivity than normal bone, so these areas are highlighted and picked up by the scanner.
- There is no need to undress for this scan and apart from the injection (similar to having a blood test), it does not involve any pain.



Front

Back

Front and back views showing Paget's disease in skull, right pelvis and ankle, left hip, shin and shoulder.

### Is it necessary to have both an X-ray and a scan?

An x ray will only show Paget's disease within the field of the image, whereas a scan gives a picture of the whole skeleton and can show whether the disease is present in several sites.

### How often will an X-ray and scan be repeated?

- An x ray may be repeated occasionally to assess whether or not the disease has progressed.
- It may also be repeated if there is increasing pain in associated joints to determine the severity of wear and tear, particularly if joint replacement surgery is to be considered.
- A further x ray would be performed if there were a marked increase in pain at the site of the disease. This could be associated with a fracture or extremely rarely with a type of bone cancer called sarcoma.
- As Paget's disease does not spread to affect new bones, there is no need to repeat the bone scan to determine the extent of the disease.

### Are other types of scans used?

The following are not used routinely but may be performed when there is doubt about diagnosis.

#### **Magnetic resonance imaging (MRI) uses a strong magnetic field and radio waves.**

- Produces detailed pictures of soft tissue such as ligaments and muscles.
- Can identify fractures
- Does not involve exposure to ionising radiation.

#### **Computed tomography (CT) scanning uses several beams of x rays at the same time**

- Produces detailed pictures, particularly of bone and provides information about fractures
- Uses higher doses of radiation than normal x-rays and would only be used if there were a good medical reason.

#### **Bone density (DXA) scanning**

- Used to diagnose osteoporosis and not Paget's disease.
- Measures bone density in the lower spine and hip.

### What blood and urine tests are performed?

- Blood and urine tests alone cannot diagnose Paget's disease but when used in conjunction with scans, x-rays and medical examination they help to confirm the diagnosis. They are also helpful in measuring response to treatment.
- The most relevant blood test is one that measures alkaline phosphatase which is a substance produced by bone cells. When Paget's disease is active, more alkaline phosphatase is produced and

the level in the blood rises. If several bones are affected the alkaline phosphatase level tends to be even higher.

- Alkaline phosphatase is also produced in the liver and can be increased if there is liver disease. The presence of liver disease can easily be checked by further blood tests.
- A blood test measuring alkaline phosphatase can be carried out at a GP's surgery or at a hospital clinic. Due to a variety of measuring techniques, reference ranges may vary slightly between different laboratories but this should not cause any difficulties in assessment of the disease.
- Additional blood and urine tests are available to measure substances called bone markers that can also show the activity of bone cells. These are not routinely available and may be performed only in specialist hospital centres.
- There are several different hormones, vitamins and minerals that can affect bone. Examples of these include parathyroid hormone, vitamin D and calcium, which may be checked in a blood test, if your doctor thinks it necessary.

### **How often will a test be performed?**

- Blood and/or urine tests will be carried out when the diagnosis of Paget's disease is first suspected.
- Treatment with a bisphosphonate (the main treatment for the disease) usually causes a fall in alkaline phosphatase level. Ideally, this should be measured six months after treatment has been given to assess the effectiveness of treatment.
- Disease activity can be monitored by repeating the alkaline phosphatase level on an annual basis and should be rechecked sooner if pain recurs at the site of the Paget's disease.

- Blood and urine tests measuring bone markers will also be repeated six months after treatment and thereafter on an annual basis in a specialist centre.
- Other blood tests will be repeated if the original ones have shown abnormalities.

This booklet has been reviewed by lay and medical trustees of the Paget's Association. Whilst it is intended to offer you information on the investigations that are performed in the management of Paget's disease it is not designed to replace specific guidance you may receive from a health professional with respect to individual care.

References on specific sources of information are held by The Association and should you wish for further information on these please feel free to contact us.



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