ASCOT RADIOLOGY

DEXA Bone Densitometry

WHAT IS BONE DENSITOMETRY?

Bone densitometry is used to measure the bone mineral content and density. This measurement can indicate decreased bone mass, a condition in which bones are more brittle and more prone to break or fracture easily. Bone densitometry is used primarily to diagnose osteoporosis and to determine fracture risk. Bone densitometry testing may be done using dual-energy x-ray absorptiometry (DEXA) to determine bone density of the hip or spine.

Dual energy x-ray absorpitometry (DEXA) was first introduced in 1987 and has become a widely accepted and sensitive method for the assessment of bone mineral density. DEXA is highly reproducible, with precision errors in normal adults of 1% or less at the spine and 1.5% at the femur. This allows for accurate measurement of both age-related bone loss and skeletal changes in response to therapy. The radiation effective doses are extremely low; at least 100 times less than those of conventional imaging. DEXA is the only available technique that can readily measure the femoral neck, where the most devastating osteoporotic fractures can occur.

Standard x-rays may detect weakened bones. However, at the point where bone weakness is obvious on standard x-rays, it may be too far advanced for treatment to be effective. Bone densitometry testing can determine decreasing bone density and strength at a much earlier stage when treatment of the bone weakness can be beneficial.

Ascot Radiology uses a LUNAR IQ system which is quick, simple, painless and uses minimal radiation.

REASONS FOR THE PROCEDURE:

Bone densitometry testing is primarily performed to identify persons with osteoporosis and osteopenia (decreased bone mass) so that the appropriate medical treatment can be implemented. Early treatment helps to prevent future bone fractures. It may also be recommended for persons who have already had a fracture and are considered at risk for osteoporosis.

The complications of broken bones resulting from osteoporosis are often severe, particularly in the elderly. The earlier osteoporosis can be identified, the sooner effective treatment can be implemented, thus most likely lessening the severity of the condition.

WHAT ARE THE CAUSES OF OSTEOPOROSIS OR OSTEOPENIA?

Osteoporosis is most commonly found in postmenopausal women, where the absence of the hormone oestrogen is related to the loss of bone mass. Other conditions that may cause osteoporosis or osteopenia include:

- Renal (kidney) failure.
- Hyperparathyroidism (overactive parathyroid gland).
- Prolonged immobility.
- Long-term corticosteroid therapy.
- Long-term hormone replacement therapy.
- GI (gastro-intestinal) malabsorption disorder.
- Cushing's syndrome: A condition in which there is increased production of glucocorticoids by the adrenal glands due to either an adrenal gland tumour or pituitary gland hyperfunction.

These conditions affect bone formation due to problems with absorption of certain substances, such as Vitamin D and calcium, which are needed to form strong bones.

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DEXA Bone Densitometry CONTINUED

BEFORE THE PROCEDURE

- Even though a DEXA scan uses minimal radiation, please let us know if you are pregnant or suspect you may be pregnant.

DURING THE PROCEDURE

- In some cases, you may stay dressed but will be asked to remove all metallic objects, such as belt buckles, zips, coins, keys, and jewellery. You will be given a gown to wear if required.
- **Two scans are done:** one of the lumbar spine and one of the hip.
- You will be positioned on the DEXA table, lying flat. Your legs will be supported on a padded box that helps to flatten the pelvis and lumbar spine.
- Under the table, a photon generator will pass slowly beneath you, while an x-ray detector camera will pass above the table parallel to the photon generator beneath, projecting images of the lumbar and hip bones onto a computer monitor.
- After the scan of the lumbar spine is complete, your feet will be turned into an internally-rotated position, and the hip is scanned. The left hip is always scanned, unless you have had a hip replacement on that side.
- Measurements are made of the spine and hip and the results are analysed in conjunction with a patient questionnaire.
- The DEXA scan takes approximately 30 minutes to complete.

TEST RESULTS

The bone densitometry test determines the bone mineral density (BMD). Your BMD is compared to two norms: healthy young adults (your T-score) and age-matched (your Z-score).

Your BMD result is compared with the BMD results from healthy 25 to 35 year old adults of your same sex and ethnicity. The standard deviation (SD) is the difference between your BMD and that of the healthy young adults. This result is your T-score. Positive T-scores indicate the bone is stronger than normal; negative T-scores indicate the bone is weaker than normal.

AFTER THE PROCEDURE

A report and recommendation is made by a specialist endocrinologist and these will be sent to your referring doctor.

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