UNIVERSITY RADIOLOGY GROUP PC

Dual-Energy Bone Densitometry (DEXA)

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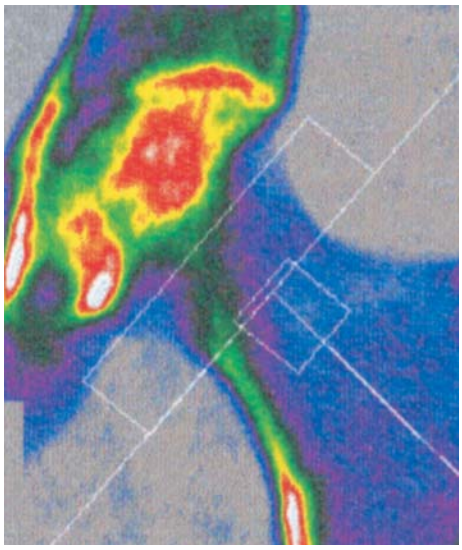
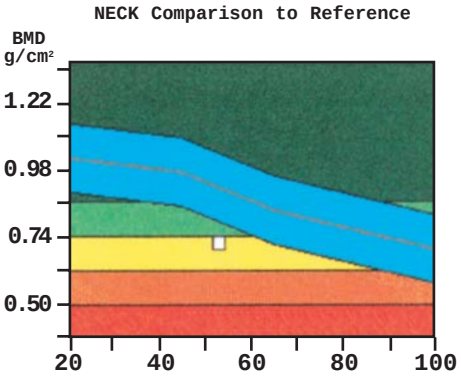


Figure 1



Region	BMD[1] g/cm²	Young Adult[2] %	Young Adult[2] T	Age Matched[3] %	Age Matched[3] Z
NECK	0 717	73	2 2	79	1 6
WARDS	0 440	48	3 6	79	2 7
TROCH	0 478	60	2 8	79	2 7
SHAFT	0 756				
TOTAL	0 647	65	2 7	68	2 4

Figure 2

Figures 1 and 2:

53-year-old female for routine DEXA exam to evaluate for possible osteoporosis. The mean (total) BMD at the left hip is equivalent to 0.65 grams/cm²; this is equivalent to 2.4 standard deviations below age and sex matched controls and 2.7 standard deviations below young normals. According to WHO criteria, this reduced bone mineral density is consistent with osteoporosis.

Osteoporosis is a disease characterized by low bone mineral density (BMD) and increased fracture risk. It affects 20 million American women and is the cause of approximately 250,000 hip fractures and 500,000 vertebral fractures each year. The 10 billion dollar annual cost of osteoporosis in the United States is largely due to the high morbidity associated with hip fractures; this could be even higher if there was not a 20% excess mortality in these patients. Bone mass measurements can help identify patients who have osteoporosis or are at increased risk for osteoporosis and can help monitor the treatment of these patients. New treatments are now available to minimize bone loss and substantially reduce possible fractures.

Dual-energy bone densitometry (DEXA) is a noninvasive, fast and inexpensive technique to measure BMD. DEXA can measure BMD at various skeletal sites, most commonly the lumbar spine and hip. DEXA measures the absorption characteristics of the patient and a known calibration material. The information is transferred to a software program to quantitate the BMD at the studied skeletal sites. The values obtained at various sites, however, cannot be directly compared. As a result, BMD values are usually interpreted in terms of standard deviation (SD) units instead of actual BMD values. The results are commonly expressed as a young-normal SD (often called a T-score) and as an age-matched SD score (usually called a Z-score). The World Health Organization (WHO) recently defined osteoporosis in terms of BMD values. Osteoporosis is defined as a BMD T-score value, lower than -2.5. Individuals with BMD T-score values between -1 and -2.5 SD are said to have low bone mass or osteopenia. While not currently at high risk for fracture, such patients may be at increased risk of developing osteoporosis in the future.

To follow interval change in bone density, it is essential to compare the absolute difference between tests rather than the T- or Z-score. DEXA measurements are highly precise and require a dedicated bone density laboratory that exercises excellent quality control. In addition, it is essential to have bone density test results interpreted by an experienced physician. This is important because many factors may influence test results such as osteoarthritis, scoliosis and arterial calcification.

A generally accepted follow-up interval for bone density testing is 1 to 2 years except when very rapid bone loss can be detected, such as a patient started on glucocorticosteroids.

Use of bone density testing:

1. To establish a diagnosis of osteoporosis.
2. To predict future fracture risk.
3. To monitor changes in BMD due to medical problems or therapeutic intervention.

Appointments for DEXA can be scheduled by calling (800) 758-5545.

If you have any questions or comments, Dr. Jeffrey Kempf would be happy to discuss them with you. He can be reached by calling (732) 390-0040.