Spinal and Radius Bone Measurement in Renal Osteodystrophy

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Dear Sir,

Bucciantiti al. [1] in their response to Torres and Moya [2] noted that single-photon absorptiometry of the radius was useful in the diagnosis and monitoring of renal osteodystrophy, and that the effects of vitamin D therapy could be readily ascertained. This has been the general finding over the past decade [3-6]. As a consequence renal disease has been one of the major applications of absorptiometry ever since the method was developed at the University of Wisconsin [7,8]. Torres and Moya [2] have contended that these appendicular measurements are not useful and that measurements of the spine by X-ray computed tomography (CT) are more sensitive. However, their own data did not demonstrate this point, and in fact no appendicular measurements were shown. In fact we have now demonstrated [9] that there is a poor prediction of spinal density (from ^{153}Gd dual-photon absorptiometry) in both osteoporosis and renal disease based on radius measurements. About half of patients with osteodystrophy have a spinal osteopenia, but many have normal or elevated spinal densities. Thus direct spinal measurements are needed for monitoring this sensitive site. However, an X-ray CT method such as advocated by Torres and Moya [2] is not suitable. Single energy X-ray CT is subject to very large (20-30% or more) accuracy errors [10-12] due to the variability of marrow composition and of osteoid [13-15]. This is due to the fact that bone mineral produces only 10-30% of the CT number and 70-90% is due to the large amount of marrow and osteoid in trabecular bone. In renal disease osteoid proliferation or anemia is frequently present so the CT results can be drastically in error. This uncertainty is exacerbated if corticosteroids (or vitamin D metabolites) have been used or if there is concomitant ovarian dysfunction. The CT results may meander meaninglessly as is evident

from the very large changes seen by Torres and Moya [2], changes which are outside of the realm of those seen in bone biopsy. Dependence on X-ray CT in renal disease can give rise to misdiagnosis and to faulty evaluation of therapy with potentially hazardous consequences for the patient. While CT is exceptionally useful as an imaging modality attempts to use it for ultra-sensitive quantitative applications have not been successful. Appropriate clinical caution must be exercised if CT is used as the results may be very erroneous; but similar caution is needed if single-photon absorptiometry on the limbs is used since the results will not always reflect the axial skeleton.

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Announcement

Diabetic Renal-Retinal Syndrome

The 3rd International Conference on the Diabetic Renal-Retinal Syndrome (Therapy) will be held on November 2 and 3, 1984, at the World Trade Center, New York, N.Y., under the auspices of the

Downstate Medical Center and Columbia College of Physicians and Surgeons.

Contact Ms. Mary Fasulo, 450 Clarkson Ave., Box 52, Brooklyn, NY 11203 (USA) for further information.