Rule Out Correctable Cases of Secondary Osteoporosis

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SAN FRANCISCO — Before initiating osteoporosis therapy on the basis of a T-score, investigate any correctable cases of secondary osteoporosis, urged Dr. Steven T. Harris of the University of California, San Francisco.

Screening for secondary causes of low bone mineral density (BMD) that starts with a careful history and examination, plus laboratory tests, identifies roughly 90% of new diagnoses of secondary osteoporosis at modest cost, he said at the meeting.

The differential diagnosis of low BMD includes a “hopelessly bewildering” list of problems that can cause secondary osteoporosis in adults, but these can be narrowed down to relatively common causes, including vitamin D deficiency, hyperparathyroidism, hypogonadism, malabsorption, chronic obstructive pulmonary disease, rheumatoid arthritis, and myeloma. Drug-induced causes — including secondary osteoporosis related to taking steroid therapy, anticonvulsants, GnRH agonists, Depo-Provera, aromatase inhibitors, and excess thyrroxine — also make the short list.

Neither age nor disease identity patients who are most likely to have an occult disorder as the cause, and thus deserve closer attention and laboratory testing for secondary causes. “There is no research evidence to support that, but it’s my clinical bias,” Dr. Harris added.

For lab tests, he orders a complete blood count to look for myeloma or malabsorption of iron, vitamin B12, and folate. He advises checking the serum 25-hydroxy vitamin D level for vitamin D deficiency. He gets a 24-hour urine calcium and creatinine screen to check for hypercalcemia or malabsorption.

In a serum chemistry panel, the albumin level may point to malnutrition. Globulin results screen for myeloma. Alkaline phosphatase results help identify malignancy, cirrhosis, or vitamin D deficiency. Calcium levels may suggest hyperparathyroidism or malabsorption. Phosphate results can suggest malnutrition or osteomalacia. Creatinine or BUN results may point to renal disease.

He orders thyroid function testing if the patient is on thyroid replacement therapy or if symptoms warrant it.

Other tests to consider (based on symptoms and results of the laboratory tests) include parathyroid hormone levels if the urine or serum calcium level is abnormally high or low. He orders serum protein electrophoresis if the CBC is abnormal, and he tests for celiac disease if the patient has low 24-hour urine calcium or anemia.

Getting a 24-hour urine calcium level is particularly important because it effectively identifies hypercalciuria or malabsorption, two disorders that are associated with higher rates of bone loss. Without a 24-hour urine calcium test, 38% of new diagnoses of hypercalciuria or malabsorption would be missed, data suggest. “Spot urine calcium does not detect malabsorption,” he said.

Secondary causes of low BMD are common, multiple studies show. In one study of 664 consecutive postmenopausal women with a T-score of −2.5 or below, 54% had known secondary causes of osteoporosis. Laboratory evaluations in 173 women without known secondary causes or prior laboratory abnormalities showed that 32% (55) had a previously unknown secondary cause of low BMD (J. Clin. Endocrinol. Metab. 2002;87:4431-7).

A reanalysis of the data suggest that 44% of the 173 had secondary causes of low BMD, most commonly low vitamin D levels, Dr. Harris said.

The prevalence of occult secondary osteoporosis has been estimated at 37%-63% in women and men at various ages, at 60%-80% in patients after hip fracture, and at 50% or more in patients on pharmacologic therapy. The estimates are based on studies with varying criteria for including the occult disorder, and the definition of vitamin D deficiency. There have been no large, population-based studies of the prevalence of occult disorders causing osteoporosis, he said.

Dr. Harris disclosed financial ties with Amgen, Eli Lilly, Genentech, Gilead Sciences, Merck, Novartis, Roche, Sanofi-Aventis, and Warner Chilcott.