Osteoporosis & Enterocystoplasty
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Osteoporosis is a skeletal disorder of decreased bone strength, which predisposes an individual to fracture and bone pain [1]. Bone mineral density (BMD) screening with dual energy x-ray absorptiometry (DEXA) scans is recommended in all women 65 years of age and older and selectively in younger postmenopausal women; males 50-69 years of age; and adults with established clinical risk factors for bone loss, such as steroid use or history of a fracture [2]. Young adults who have undergone enterocystoplasty do not routinely fit these criteria; however, they too are at risk, particularly when other factors are present. These patients, therefore, warrant earlier screening to prevent the morbidities associated with bone loss.

Previously, we reviewed our cohort of 24 patients who had undergone enterocystoplasty or continent urinary diversion for non-neurogenic reasons [3] with at least 15-year follow-up. Briefly, these patients ranged in ages from 18-60 years with an equal distribution of males and females. Clinical records and metabolic panels were reviewed, and DEXA scans were performed for each patient. This study was undertaken with the knowledge that interposition of bowel into the urinary system results in chronic metabolic acidosis due to intestinal absorption of ammonium and chloride from the urine. The resulting hyperchloremic metabolic acidosis [4] leads to increased urinary calcium excretion [5], which affects skeletal architecture as bone stores attempt to buffer the excess hydrogen ions by releasing carbonate and phosphate.

Our data, however, demonstrated that the presence of intestine in the urinary system alone does not predispose patients to bone loss, as eleven patients had normal T- and Z-scores on their DEXA scans (according to WHO standards). The remaining 13 patients demonstrated evidence of bone loss - 6 had osteoporosis, and 7 were classified to have osteopenia, the precursor to the former. These patients all had additional risk factors, including chronic disease states and compromised renal function, which has been shown in several studies to be a significant risk factor in BMD loss [6-8].

Osteoporosis is a major health issue in the United States. The NIH estimates that 53 million Americans are at increased risk for fracture. These fractures cost the US healthcare system approximately $19 billion annually. Development of osteopenia and osteoporosis is multifactorial, but patients that have undergone enterocystoplasty are at increased risk given that many of these patients have comorbid disease and given the inherent physiologic changes that accompany use of intestine in the urinary system. Heightened clinical awareness is necessary as these patients are not included in the standard group to be screened for bone loss. Only one of the patients in our cohort showed laboratory evidence of metabolic acidosis; however, when this is present, it should be treated aggressively to avoid compounding the disease process.

REFERENCES