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CANCER AND OSTEOPOROSIS: HOW IMPORTANT IS IT?

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Cancer and its treatments are well-established contributors to the deterioration of skeletal health, primarily through reductions in bone mineral density (BMD), ultimately resulting in osteoporosis and an elevated risk of fractures. This complication extends far beyond the musculoskeletal system, constituting a significant systemic issue that adversely affects patients' quality of life, level of independence, physical functionality, and long-term outcomes. In oncology, the preservation of bone integrity is particularly critical in patient populations with prolonged survival expectations, such as women with early-stage breast cancer and men with non-metastatic prostate cancer. In these groups, the burden of skeletal complications becomes increasingly relevant as overall cancer survival improves. Androgen deprivation therapy (ADT), a cornerstone of treatment in prostate cancer, has been widely associated with a spectrum of adverse metabolic and skeletal effects, including obesity, insulin resistance, metabolic syndrome, osteoporosis, sarcopenia, cardiovascular disease, gynecomastia, and hypogonadism. Similarly, the use of aromatase inhibitors in hormone-sensitive breast cancer significantly accelerates bone loss, particularly in postmenopausal women. Collectively, these treatment-related effects create a high-risk profile for fracture development, emphasizing the importance of early and proactive bone health management in cancer survivors. According to current ASCO guidelines, all patients with non-metastatic cancer should undergo a comprehensive assessment of clinical risk factors for osteoporotic fractures at the time of cancer diagnosis. In individuals at elevated risk, BMD should be measured promptly using dual-energy X-ray absorptiometry (DXA), and fracture probability should be further evaluated through validated tools such as the FRAX score. Risk stratification should guide clinical decision-making and allow for timely intervention.

Management of osteoporosis in cancer patients must be multifaceted. Pharmacologic therapies play a central role; bone-targeted agents such as bisphosphonates (e.g., zoledronic acid) and RANKL inhibitors (e.g., denosumab) have demonstrated efficacy in both reducing the incidence of skeletal-related events and preventing the progression of cancer-treatment-induced bone loss. Non-pharmacologic measures are equally essential and include weight-bearing physical activity, adequate calcium and vitamin D supplementation, nutritional optimization, fall prevention strategies, and behavioral modifications such as smoking cessation and reduction in alcohol consumption. A multidisciplinary approach—often involving oncologists, endocrinologists, PM&R specialists, and rehabilitation teams—is ideal for addressing the complex needs of this population. In conclusion, osteoporosis remains underdiagnosed and undertreated in patients with cancer, despite its well-documented impact on morbidity and mortality. Fragility fractures significantly impair quality of life, increase hospitalization rates,

accelerate functional decline, and add to overall healthcare costs. Therefore, proactive bone health assessment and intervention should be integrated into routine cancer care. Maintaining skeletal health is essential not just for preventing fractures, but for preserving physical function, sustaining independence, and enhancing the overall survivorship experience in oncology.

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