Zoledronic Acid and Its Accentuating Effect on Tumor Radiosensitivity

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Disclosures of potential conflicts of interest may be found at the end of this article.

The recent article by Valachis et al. provided for highly stimulating reading [1]. Zoledronic acid may significantly augment the radiosensitivity of a number of other systemic malignancies.

For example, similar benefit is seen in fibrosarcomas. In addition, ionizing radiation following zoledronic acid administration is associated with markedly accentuated intratumoral apoptosis, and augmented reactive oxygen species levels are typically seen following the dual intervention [2]. Ionizing radiation-induced accentuation of NF- κ B is mitigated by zoledronic acid, thereby augmenting the radiosensitivity of the fibrosarcomas. Similar results have been seen in osteosarcomas. Intratumoral apoptosis is markedly augmented, and G1 phase arrest is significantly accentuated within the osteosarcomas [3].

Similar attenuation of intratumoral growth is seen following the use of zoledronic acid in conjunction with radiotherapy

in esophageal squamous cell carcinomas. Vascular endothelial growth factor expression is markedly downregulated following zoledronic acid administration and is attenuated even more following radiotherapy [4]. In fact, a synergistic anti-angiogenesis response is seen following the dual intervention. Zoledronic acid exerts similar benefits in mammary malignancies, and the dual combination exerts marked synergism [2]. Ural et al. confirmed these effects, which are time dependent, in a recent study [5].

The above examples clearly illustrate the radiosensitivity-enhancing properties of zoledronic acid and the need to increase awareness of these properties among oncologists.

DISCLOSURES

The author indicates no potential conflicts of interest.

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