

Effects of zoledronic acid monohydrate on cytotoxicity and apoptosis in BCPAP human papillary thyroid carcinoma cell line.

Simsir IY¹, Avci CB², Kocabas GU³, Yurekli BP¹, Erdogan M¹, Cetinkalp S¹, Ozgen AG¹, Yilmaz C¹, Gunduz C², Saygili LF¹

¹Ege University Medical Faculty, Department of Internal Medicine, Division of Endocrinology and Metabolism, Izmir/Turkey

²Ege University Medical Faculty, Department of Medical Biology, Izmir/Turkey

³Bozyaka Training and Research Hospital, Izmir/Turkey

Thyroid cancer in Turkey is the most common endocrine neoplasm with an incidence of 3.7%. Papillary thyroid carcinoma is the most common thyroid malignancy in a similar manner. Papillary thyroid carcinoma creates 50-90% of differentiated thyroid carcinomas. There is available in subgroups with poor prognosis. Case-specific mortality of 2% at 5 years, 10 years, 20 years, only 4% and 5%.

Mutations and re-arrangements in genes encoding proteins of the MAPK pathway for the development and progression of differentiated thyroid cancer, gain more and more importance.

Bisphosphonates decrease tumor cell proliferation, reduce cell viability, stimulate apoptosis in tumor cell, inhibit cell adhesion and angiogenesis, and decrease metastatic potential in vitro.

We have established our hypothesis on the idea that this drug with minimal side effects has the potential to be an option instead of radioactive iodine treatment, or neoadjuvant prior to surgery or adjuvant therapy after surgery in patients with papillary thyroid carcinoma.

Zoledronic acid monohydrate with increasing doses of 10 to 100 μ M was used on a papillary thyroid carcinoma cell line of human origin named BCPAP.

IC50 value with zoledronic acid monohydrate was found in first experiment at 48th hour to be 55 μ M, but 2nd and 3rd experiments failed. Therefore, apoptosis assays were not to be established. We investigate the reasons for inability to the result, and we will examine again with a different papillary thyroid carcinoma cell line.