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Tumor shrinkage in a tamoxifen-treated non-functioning pituitary neuroendocrine tumor with positive estrogen receptor-beta (ERβ): A case report and review of the literature

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Abstract
Administration of selective estrogen receptor modulators (SERMs) and anti-estrogens has been shown to reduce the size of pituitary tumors. However, previous studies were performed on animal pituitary tumors or tissue cultures. We administered oral tamoxifen to a postoperative patient with a nonfunctioning pituitary neuroendocrine tumor (NF-PitNET) to investigate its potential effect on tumor volume. This case report presents the case of a 47-year-old female patient with a null cell adenoma who had undergone surgical resection as primary treatment and was left with a residual tumor that grew significantly. She was treated with tamoxifen 20–40 mg daily for one year. She was followed up to assess tamoxifen adherence, tolerability, and adverse events. The resected pituitary tumor was stained with estrogen receptor alpha (ERα) and beta (ERβ), proliferation markers (ki-67 and p53), and H&E staining for mitotic count. MRI of the pituitary gland was performed before starting treatment, after 6 months, and after 1 year of tamoxifen therapy. Her resected tumor showed high-intensity ERβ staining in the absence of ERα expression. She was able to tolerate oral tamoxifen therapy without side effects. Tamoxifen therapy resulted in a remarkable reduction in residual tumor volume of up to 87 % in this patient. Tamoxifen has a potential therapeutic effect in treating patients with residual NF-PitNET tumors that have regrown after primary resection. This finding may provide an alternative treatment modality for recurrent NF-PitNET. ERβ expression may predict response to tamoxifen in this subset of patients. © 2024

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Estrogen receptor; Non-functioning pituitary neuroendocrine tumor; SERM; Tamoxifen

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