Adverse radiation effect

Adverse radiation effect (ARE) is one of the complications of stereotactic radiosurgery. Its treatment with conventional medications, such as corticosteroids, vitamin E, and pentoxifylline carries a high risk of failure, with up to 20% of lesions refractory to such medications. In addition, deep lesions and those occurring in patients with significant medical comorbidities may not be suitable for surgical resection. Bevacizumab is an antiangiogenic monoclonal antibody against vascular endothelial growth factor, a known mediator of cerebral edema. It can be used to successfully treat ARE. CASE DESCRIPTION:

An 85-year-old man with a history of small-cell lung cancer presented with metastatic disease to the brain. He underwent stereotactic radiosurgery to a brain metastases involving the right external capsule. Three months later, the lesion had increased in size, with significant surrounding edema. The patient developed an adverse reaction to steroid treatment and had a poor response to treatment with pentoxifylline and vitamin E. He was deemed a poor surgical candidate because of his medical comorbidities. He was eventually treated with 3 doses of bevacizumab, and the treatment resulted in significant clinical improvement. Magnetic resonance imaging showed some decrease in the size of the lesion and significant decrease in the surrounding edema. CONCLUSIONS:

Bevacizumab can be successfully used to treat ARE induced by stereotactic radiosurgery in patients with cerebral metastases. It is of particular benefit in patients considered unsuitable for surgical decompression. It is also beneficial in patients with poor tolerance to corticosteroids and in patients who do not respond to other medications [1)].

1)
Sneed PK, Mendez J, Vemer-van den Hoek JG, Seymour ZA, Ma L, Molinaro AM, Fogh SE, Nakamura JL, McDermott MW. Adverse radiation effect after stereotactic radiosurgery for brain metastases: incidence, time course, and risk factors. J Neurosurg. 2015 Aug;123(2):373-86. doi: 10.3171/2014.10.JNS141610. Epub 2015 May 15. PubMed PMID: 25978710.