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Editorial

Radiation therapy for benign oculo-orbital disorders

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Season Greetings !!

Radiotherapy is one of the most important therapeutic alternatives to surgery for management of orbital and periorbital tumors. Orbit has unique radiation therapy challenges due to its anatomy and ocular radiosensitivity. The lacrimal system and intraocular structures like conjunctiva, cornea, lens, retina and optic nerve are more radiosensitive and often associated with vision threatening complications. Commonly available radiation therapy techniques are external beam radiation therapy (EBRT), intensity modulated radiation therapy (IMRT), stereotactic radiosurgery, particle radiation therapy (proton and heavy ion radiation) and brachytherapy (contact radiotherapy) etc.

Radiation therapy has been recommended for both malignant and benign orbital lesions. Following are benign oculo-orbital lesions which require radiation therapy.

Orbital Meningiomas

Orbital meningiomas may be primary (originating from optic nerve sheath) or secondary (arise from the cranial cavity and paranasal sinus compresis etc). Optic nerve sheath meningioma compromises of 1% to 2% of all meningiomas.[1] Intracranial meningioma can cause bilateral loss of vision. Total surgical excision if possible is recommended for optic nerve meningioma. Surgical therapy can be associated with a high rate of visual loss. Radiation therapy is recommended if surgical margins are not possible, for recurrent tumor or when surgery is contraindicated.[2,3] Several studies suggests that radiation therapy may be the first treatment of choice for optic nerve sheath meningioma. Sight can be preserved by radiation therapy in 90% of patients.[4] The recommended doses for primary treatment is 54 Gy in 33 fractions.[5]

Optic nerve glioma

It is a benign slow growing tumor typically affecting children below 15 years of age. Patients present with progressive proptosis and loss of vision. Treatment of ONG depends on age of patient, visual acuity, field defect, and presence of neurofibromatosis. Radiotherapy is mainly reserved for patients having extension to the optic chiasma.[6] A wedged pair external (photon beam) technique is commonly employed and recommended doses are 45-50 Gy (18-20 Gy daily fraction).[7] The high relapse free survival rate has been reported with optic nerve glioma treated by radiation therapy.[8]

Vascular tumors of orbit

EBRT has been recommended for orbital cavernous haemangioma of adulthood which extends into orbital apex and are non resectable. The dose of EBRT 14-40 Gy.[9,10]

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Infantile capillary haemangioma is the most common congenital benign orbital tumor. It is very radiosensitive tumor but due to possibility of secondary carcinogenesis, radiation therapy is reserved as a last option when other treatments are not possible or have failed.[11]

Pseudotumor

Idiopathic inflammation of the orbit also called pseudotumor orbitae frequently manifests as swelling of the lacrimal gland followed by extraocular muscle and orbital fat. Oral corticosteroid and other immunosuppressive drugs are the main treatment. External beam radiotherapy may be an effective treatment option in steroid non-responders or when steroids are contraindicated. Matthiesen et al reported alleviation of symptoms in 80% patients who underwent EBRT with 20Gy.[12]

Pterygium

Large sight threatening pterygium involving visual axis can be treated with brachytherapy by using Strontium 90. S^{90}emits beta radiation (high speed electron), most suitable for use in ocular surface treatment. It can be used preoperatively or just after excision of pterygium. It lowers the risk of post operative recurrence.[13]

Age related macular degeneration (ARMD)

In exudative or wet type age related macular degeneration neovascularization of choroid occurs underneath the retinal pigment epithelium. These aberrant vascular sprouting are radiation sensitive. EBRT or episcleral brachytherapy (12 Gy) may be effective treatment option in wet ARMD. Another form of radiation therapy for wet ARMD is intraocular (epimacular) brachytherapy (EMBT) which may preserve the sight.[14]

Conflict of Interest

The author declare that there are no conflicts of interest which in this paper.

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