Nikolaos E. Bechrakis

Current trends in the management of **uveal melanoma**

Uveal melanoma is a very common adult primary intraocular tumor with an incidence of approximately 7 newly diagnosed patients per million inhabitants in the Caucasian population.

NIKOLAOS E. BECHRAKIS, MD, FEBO
PROFESSOR AND CHAIR, DEPARTMENT OF OPHTHALMOLOGY
UNIVERSITY CLINIC ESSEN, GERMANY

Peripapillary choroidal melanoma. OPTOS image

At present, the mainstay primary treatment of uveal melanoma is radiation therapy, i.e., either brachytherapy or teletherapy. Several modalities can be applied in brachytherapy, such as 106-ruthenium plaque or 125-iodine plaque treatment. Teletherapy can be administered either by stereotactic radiotherapy or proton beam irradiation at institutions that have a cyclotron facility. The radiation treatment options can be complemented by various surgical techniques, such as eye-salvaging transscleral resection, endoresection, or even enucleation. The preferred primary treatment technique is dependent on its availability in the individual institution and should be customized according to the size and location of the choroidal melanoma.

106-Ruthenium brachytherapy is a widely used treatment option in Europe that was developed in the 1960s in Germany. It is a highly effective and cost-efficient treatment modality that yields long-term local tumor control of approximately 90% at 10 years. This local tumor control is dependent on the size of the tumor, and the ciliary body infiltration is a risk factor for local tumor recurrence. Moreover, the overall eye retention rate is usually 92%.

In this medium-sized tumor group, the metastatic rate is almost 20%, with ciliary body infiltration and larger tumor diameter and thickness the main clinical risk factors for the development of metastasis. Proton beam irradiation is a teletherapy treatment modality that uses the steep distal radiation drop-off called the Bragg peak. This helps to ensure an optimal dose distribution in tumors that are close to the critical structures of the eye, such as the optic disc and the macula. In a medium-sized tumor group, the 10-year rates of local tumor control, eye preservation, and metastasis are approximately 95%, approximately 90%, and usually 20%, respectively.

One of the main difficulties in uveal melanoma treatment is long-term visual preservation, especially in cases located close to the optic disc and the macula. The higher the radiation dose to these critical structures, the lower the long-term visual preservation. As a general rule, after proton beam radiation, radiation-induced adverse effects are expected to occur later than those that develop after 106-ruthenium plaque brachytherapy. However, in tumors that exceed approximately 7-mm thickness, severe radiation-induced adverse effects such as exudative retinal detachment and secondary ischemic syndromes with neovascular glaucoma, and the so-called toxic tumor syndrome, are encountered more often. In these cases, additional surgical resection of the tumor is proposed, either by transscleral resection (ab externo approach) or endoresection (ab interno approach by vitrectomy). Several analyses have proven that local tumor control is linked with metastatic risk, so it is generally advisable to combine a radiation treatment with surgical resection in all cases to minimize the risk of local tumor recurrence. This can be either neoadjuvant radiation treatment before resection or adjuvant plaque brachytherapy after resection. The former (neoadjuvant radiotherapy with secondary resection) has been proven to provide the best local treatment control. In the case of endoresection prior to this procedure in particular, radiotherapy inactivation of the tumor by adequate dose distribution should be administered to avoid late recurrence.

The prognostic parameters for metastasis in uveal melanoma can be divided into clinical and morphological/genetic parameters. The former can be calculated according to the tumor-node-metastasis (TNM) classification and can be obtained without any invasive techniques. At present, the most accurate prognostication for this tumor is only possible by harvesting tumor material, either by biopsy or by surgical resection. The presence of monosomy 3 in uveal melanoma cells and other specific gene expression profiles have been identified as the best prognostic factors for tumor metastasis. However, there is no effective treatment for tumor metastasis at present, and there is no effective medical adjuvant treatment for reducing the metastatic risk. Better identification of the genetic profile and individual biology of uveal melanomas is expected to achieve better overall survival in the near future for patients with this otherwise lethal tumor.

Oftalmologisk Selskap i Oslo

Oftalmologisk selskap i Oslo (OSO), stiftet i 1905, inviterer hvert år fremragende øyeleger/forskere til Oslo for å holde foredrag. Redaksjonen i Oftalmolog tar sikte på å gjengi de beste foredragene fra OSO i forkortet form i tidsskriftet. Forrige foredragsholder i OSO var den anerkjente professoren og øyelegen Nikolaos Bechrakis fra Medical University of Innsbruck i Østerrike. Et av hans foredrag hadde tittelen "Current trends in the management of uveal melanoma."

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Bechrakis har mottatt flere priser, inkludert *Leonhard-Klein Prize* fra den tyske øyelegeforeningen og den tyske vitenskapsforeningen for betydelige innovasjoner innen mikrokirurgi i øyefaget. Han har skrevet en rekke artikler om blant annet uvealt melanom. I en årrekke har Bechrakis vært leder for European Leadership Development Program (EuLDP), som utgår fra European Society of Ophthalmology. I neste nummer av Oftalmolog vil Bechrakis presentre EuLDP for våre lesere.