2351 Radiation Therapy for Orbital Lymphoma

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Purpose/Objective: Radiation treatment of orbital lymphoma must preserve the integrity of the orbit without compromising local control. This abstract presents our experience on a cohort of patients with orbital lymphoma treated in our institution. Radiation techniques, treatment outcome and long-term toxicity are discussed.

Materials/Methods: A retrospective review identified 36 consecutive patients with orbital lymphomas treated with RT between 1986 and 2003. There were 12 males and 24 females with a median age of 60 years (range, 24–93). The median follow-up was 40 months (range, 2–182 months). Eleven patients (31%) had simultaneous bilateral eye involvement. The most common subtypes were MALT (56%) and follicular (28%) lymphoma; others included mantle cell (6%), low-grade B-cell (6%), DLCL (3%), and diffuse small B-cell lymphoma (3%). Nine patients had prior lymphoma and 27 had primary disease. Among these 27 patients, there were 19 stage I, 7 stage II (6 with bilateral orbital disease and 1 with ipsilateral orbit and parotid involvement) and 1 stage IV. Only one patient with localized primary disease received chemotherapy in addition to RT.

Results: The median dose was 30.6 Gy for all patients, 30.3 Gy for MALT histology and 32.4 Gy for follicular histology. Eighteen of all 47 irradiated eyes and, among them, 9/27 eyes with MALT histology received $<$30 Gy. En face electrons (6 or 9 MeV) were used in 7 patients (9 eyes) with disease confined to the conjunctiva or eyelid in 2–2.5 Gy fractions. The remaining 29 patients (38 eyes) with involvement of intra-orbital tissues or lacrimal apparatus received 6 MV photons to cover the entire orbit in 1.5–2 Gy fractions. The most common techniques were AP field (13 patients) and anterior wedge pair (10 patients). Contact lens shields were used with all electrons, and hanging eye blocks were used in 8/38 eyes treated with photons in which adequate tumor coverage could be ensured. The local control rate in the 47 irradiated eyes was 100%. Among 26 patients with localized primary lymphoma, 3 distant failures occurred, and 4 patients died, with 1 death from lymphoma. Among the 3 patients with distant relapse, 1 had initial MALT histology and the other 2 had initial follicular histology. Late toxicity included 9 eyes that developed cataracts requiring surgery. All 9 had been treated with photons (range, 30.6–40.6 Gy) in the absence of a lens block, for a 30% crude risk of cataract development in those receiving photons without a lens block. Corneal erosion occurred in 1 patient with Sjogren's disease after receiving 18 (of planned 30) Gy; this patient subsequently underwent keratoplasty and evisceration. Mild dry eye requiring once daily eye-drops was reported in 31% of patients. No vision deterioration or retinal damage was documented.

Conclusions: Local control of orbital lymphoma with radiation (median dose, 30.6 Gy) was 100% regardless of histologic subtype. The distant relapse rate in patients with localized orbital lymphoma was lower than that reported for low-grade lymphoma presenting in other sites, and survival was good. The predominant histology was MALT, and the clinical behavior and treatment outcome of these MALT lymphomas were similar to those of the other subtypes. Cataracts, seen only in patients treated with photons in the absence of a lens block, were the major late complication. Given the excellent local control rate and minimal morbidity, it appears that a dose of 30 Gy is sufficient to treat indolent orbital lymphomas. Electrons with a contact lens block can be used for disease confined to conjunctiva or eyelid. Photons should be used for any intra-orbital involvement to treat the entire orbit, with a hanging lens block added only when adequate tumor coverage is not compromised.

2352 Clinical Outcome of Ocular Adnexal MALT Lymphoma Treated with Radiotherapy

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Purpose/Objective: To evaluate the clinical behavior and treatment outcome of efficacy and feasibility of radiotherapy for the ocular adnexal MALT lymphoma.

Materials/Methods: Forty-eight patients with the ocular adnexal MALT lymphoma treated with radiation therapy between 1991 and June 2002 were analyzed retrospectively. There were 28 males and 20 females. The age at diagnosis ranged from 26 to 89 years with a median of 61 years old. There were 12 patients with eyelid and/or conjunctiva involvement, 10 patient with lacrimal gland involvement and 26 patients with retroocular space involvement. Forty-two patients had primary disease (38 Stage I, 3 Stage II, 1 Stage IV) and six patients had recurrent disease (5 Stage I, 1 Stage II). Twelve patients had bilateral lesions. All patients had good performance status and no general symptoms. Three patients were treated radiotherapy following chemotherapy and 45 patients were treated with radiotherapy following diagnostic surgical resection. Irradiated targets were gross tumor volume with 1 cm margin with or without lens sparing. Total dose ranging 30 to 50 Gy with a median dose of 30.6 Gy was delivered by 4 MV X-ray or 4–15 MeV electron beams. Most of the fraction size was 1.8 Gy with ranging from 1.8 to 2 Gy. The median follow-up was 42 months with a range of 2–113 months.

Results: Initial responses to radiotherapy included CR in 24 patients, PR in 20 patients and NC in 3 patients, but most of patients (except 8) included CR until 1 year after treatment. The five-year local control rate was 94.4% (only one in the 62 orbits treated had local recurrence). The overall survival and cause-specific survival rate at 5 years were 97.2% and 100% respectively. The five-year progression free survival was 61.0%. Four patients had recurrence contra-lateral site, six patients occurred distant involvement and one patient had both. Advanced stage (over Stage II) or recurrent disease tends to appear distant involvement. Age, total radiation dose, bilateral lesion and location within the orbit did not affect the distant involvement.

According to Common Terminology Criteria for Adverse Events (CTCAE), grade 3 (Operative intervention indicated) cataracts were observed in 13 eyes (21%), grade 2 retinopathy in 4 eyes (6.5%) and grade 2 xerophthalmia in 5 eyes (8.1%). Lens sparing technique and total radiation dose of $<$31Gy reduced the occurrence of grade 3 cataract. None of the patients who exposed $<$31Gy of radiation dose had a grade 2 or 3 retinopathy. Age and gender did not affect the risk of late complications.

Conclusions: For MALT lymphoma of the ocular adnexa, radiotherapy was effective treatment method with low late complication rate. Radiation dose of 30.6Gy/17fr is enough for local control and lens sparing technique can reduce the risk of cataract.