

Dose Response to Radiation Therapy for Primary Ocular Lymphomas

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Lympho proliferative lesions are the most common primary orbital malignancies. Primary lymphoma of the orbit and ocular adnexa accounts for <1% of Non-Hodgkin Lymphoma (NHL) [1-3] and occurs in older individuals, accounts for 24% of all orbital lesions in patients >59 years [4]. Orbital Lymphoma (OL) commonly presents with proptosis and is typically a painless, progressive orbital lesion; however, the conjunctival lesions appear clinically as fleshy salmon patch lesions [5,6]. The treatment options are surgical excision, chemotherapy, Radiation Therapy (RT), or combination of chemotherapy. Radiation therapy alone is the most effective treatment modality for the orbital lymphoma with excellent local tumor control [7-12]. The local and systemic relapse rate was reported to be less after treatment of OL by RT due to the indolent nature of the MALT variants. Different radiation techniques and doses (with or without adjuvant chemotherapy) were used by the several authors depending on the extent of the disease and severity. Kennerdell et al. reported 100% complete response of the lymphoid lesions of the orbit and ocular adnexa with low-dose RT (24-25.5 Gy) with very few acute and chronic side effects [8]. Several authors advocated 30-40 Gy for low to intermediate grade lymphomas with good local control and better 5 year survival. In a retrospective chart review of 31 cases of orbital MALT lymphoma, Le et al. observed a complete local control of the tumor with an overall 10 year survival of 73%. However, they did not find a significant difference in the outcomes among patients treated with RT dose of ≤ 30 Gy versus the >30 Gy and recommended that RT dose of 30-30.6 Gy provides excellent local control of tumor with minimal long-term side effects [9]. Galienu et al. observed complete response to the radiotherapy in seven patients of low-grade MALT lymphoma treated with RT dose of 36-40 Gy over a median follow-up of 51 months. However, among the patients treated with chemotherapy, local relapse was observed in 3/15, which resolved completely to the local irradiation [13]. In a multi-institutional, retrospective study by Uno et al. complete tumor response was seen in 26 patients (mean RT dose 36 Gy) and partial response in 20 others (mean RT dose 37.5 Gy) [11]. The local tumor recurrence was noted in 6 of the patients with partial or no response. They concluded that the age (<60 versus >60 years), gender, location (conjunctiva versus others), laterality (unilateral versus bilateral) or the dose of radiation therapy (≤ 30 Gy versus >30 Gy) did not contribute to the local tumor recurrence and felt the initial tumor response to RT influenced the probability of local recurrence. The overall 5-year survival rate for all the patients was 91% with a median follow-up of 46 months. Fung et al. noted 4 cases with local recurrence of the 98 cases of MALT lymphoma. Three of the 4 had stage I disease (primary orbital tumor treated with RT dose of <30 Gy) and one had a bilateral orbital disease (primary orbital tumor treated with RT dose of >30 Gy) [7]. The systemic relapse-free survival rate among the stage I MALT lymphoma patients which comprise major group in their study was 75% at 5 years and the overall 5-year survival rate was 95%. However for the stage III-IV MALT lymphoma in the same study the 5 year disease specific survival rate was 49% and the overall survival rate was 39%. To summarize, excellent local tumor control rates were observed with radiation therapy with doses 24- 30 Gy in most studies.

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