Patients and Methods

In this retrospective single-center study, we reviewed data of 730 patients who had undergone periocular interventions at the University Hospital Zurich, Switzerland, between 2009 and 2014. 145 patients who met the inclusion criteria of having signed the informed consent and receiving RT for periocular lesions at the Dermatology Department with histological diagnoses of SCC, BCC, LM, cutaneous melanoma, cutaneous lymphoma (mycosis fungoides (MF), primary cutaneous T-cell lymphoma (PCTCL), diffuse large B-cell lymphoma (DLBCL)), Kaposi's sarcoma as well as AK and BD were included in the analysis. Patient data were collected in the clinical information system (KISIM, CISTEC AG, Zurich, Switzerland) and included demographic data, tumor specifications (diagnosis, histological subtypes, tumor location, whether the lesion was a primary or relapsed tumor), presence of other skin malignancies, RT side effects, recurrence and last follow-up. If follow-up data were unavailable in the clinical information system, missing data were collected by correspondence with the treating physician or direct contact with the patient. Toxicity was graded according to the Common Terminology Criteria for Adverse Events (CTCAE), version 4.03 [16]. The severity of acute adverse events was measured using grades 1–5 (1 = mild; 2 = moderate; 3 = severe; 4 = life-threatening; 5 = death related to adverse events). Patients (n = 3) with residual lesions 4 weeks after the end of irradiation were defined as nonresponders and excluded from the progression-free survival analysis. Treatment outcome was classified as response (no clinical signs of tumor) and recurrence (clinical or histological signs of relapse within the irradiation field).

All patients were treated using a Gulmay D3100 Superficial X-Ray Therapy System (Gulmay Ltd., Surrey, UK) and received grenz (10 kV) or soft X-rays (20–50 kV) according to the recommendation for the fractionation regimen (3–13 sessions $\times$ 2–20 kV; 2- to 5-day intervals; total dose per field from 12 to 120 Gy; tubus varied according to size and location of the lesion; gold-plated internal eye shield was added for protection) [17, 18]. Lesions were irradiated with an additional safety margin (BCC/SCC 10 mm, LM/LM melanoma 15 mm, AK/BD 10 mm, MF 5–20 mm, PCTCL/DLBCL 15 mm, Kaposi's sarcoma 10 mm).

Statistical Analysis

Statistical analysis was performed using R (RStudio Inc., Boston, MA, USA). The normally distributed data were summarized by mean and standard deviation, whereas median and range were reported if normality could not be assumed. A 2-sided t test was used for group comparison. Categorical data were presented as absolute numbers and percentage, with significance tested by Pearson's χ^2 test. Recurrence rates in patients who had a follow-up of at least 12 months were calculated using the Kaplan-Meier method. A p value <0.05 was considered to be statistically significant.