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Abstract	<p>Advances in orbital radiotherapy has increased therapeutic efficiency and reduced side-effects but a significant proportion of patients are still seen with complication like dry eye syndrome (DES). The present study is an attempt to investigate the effect of orbital radiotherapy on the histoarchitecture of human lacrimal gland and subsequent development of DES.</p> <p>Medical records of patients who underwent orbital radiotherapy as a management protocol and met with the inclusion criteria of the study were reviewed retrospectively after IRB approval. Lacrimal gland tissue was harvested from 3 of these patients who underwent subsequent orbital exenteration and used for histological and in-vitro culture study. Retrospective data analysis reveal prevalence of DES in 47.07% of the patients by 3.9 years post-radiation, with nearly 50% developing it within 0.5-2.9 years. Using the DEWS 2007 criteria, nearly 18% patients develop grade 2, 14% develop grade 3 while 16.69% develop grade 4 DES. The most common co-morbidities observed were radiation retinopathy (33.4%), radiation-induced cataract (24.9%) and radiation keratopathy (20.8%). Multivariate and univariate analysis showed that fraction of radiation and dose of radiation/ fraction were significant risk factors; male gender and young age were protective factors. The 3 post-radiated lacrimal glands showed near-total effacement of histoarchitecture with extensive fibrosis, loss of acini, reduced secretory activity and few stem cells. Attempts to establish epithelial cultures from post-radiated glands were unsuccessful.</p> <p>The study documents morphological and functional loss of lacrimal function in 50% of the patients with a prediction of two-third developing DES by the end of 5 years.</p>
Section Editor	Assigned
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