J Cancer Sci Ther 2014, 6:10
http://dx.doi.org/10.4172/1948-5956.S1.035

OMICS Group Conferences
Accelerating Scientific Discovery

4th World Congress on
Cancer Science & Therapy
October 20-22, 2014 DoubleTree by Hilton Hotel Chicago-North Shore Conference Center, USA

Orbital tumors in USA: Difference in survival patterns

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Introduction: Tumors that occur in the orbital region are either involving intra-ocular layers or extra-ocular orbital soft-tissue structures. Whereas all affect the orbital region, only adnexal tumors are named after the orbit. The most common primary intra-ocular tumors include retinoblastomas in childhood and choroidal melanomas in adults, in addition to other rarer entities. Orbital masses comprise a wide variety of lesions depending on its site of origin. Based on their behavior, these lesions differ in their management. Most are benign, as hemangiomas, adenoid cysts, lacrimal gland adenomas and benign skin lesions. Others, however, are malignant and may require special treatment, as lymphomas, carcinomas and rhabdomyosarcomas. In most of these cases it is the ophthalmologist that is first to examine the lesions. Survival rates of these malignant tumors have not been studied before in a single study. There is a wide range of tumors affecting the orbital adnexa. Key such tumors include lymphomas, carcinomas, melanomas and rhabdomyosarcomas. Several studies have proposed that these histological subtypes differ in their survival outcomes. In this study we aim to describe the difference in survival outcomes between such subtypes.

Methods: The SEER database was used to gather patient information. All 18 SEER registries were used. Patients diagnosed from 1996 to 2005 were included in the analysis. Observed five-year survival rate was calculated using the SEER*Stat software version 8.1.2. Data were extracted into IBM SPSS version 20 to generate Kaplan Meier curve for each group.

Results: There were 2180 patients in the SEER databases who met the selection criteria. Lymphomas were the most common histology in adults. The overall five-year observed survival for all lymphoma patients was 75.9% (95% CI: 73.7–78.1). There was statistically significant difference between observed survival rates of lymphoma subtypes. Carcinomas were the second most common tumors. Their five-year observed survival rate in our study was 60.4%. There was no statistically significant difference between carcinoma subtypes' observed survival rates in the 20–49 age group, while, in the older age group, the difference was found to be statistically significant. Rhabdomyosarcomas were the most common tumors in children. The overall five-year observed survival rate for rhabdomyosarcomas patients was 89.8%. There was no statistically significant difference between observed survival rates of rhabdomyosarcomas subtypes. There was no statistically significant difference between relative survival rates according to gender and treatment received except within melanomas. Conclusion: In adults, lymphomas have better survival rates than carcinomas. Whereas the lymphoma subtype can be used as a determinant prognostic factor in any age, the carcinoma subtype can be used as such a determinant in older age groups only. In children, rhabdomyosarcomas are the predominant tumors affecting the orbital adnexa. Further studies are needed to determine if the difference between embryonal rhabdomyosar- coma and alveolar rhabdomyosarcoma observed survival rates are statistically significant.

Response-guided radiotherapy: A patient-based customized strategy for cancer treatment in the "big data" era

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Now that cancers clinically presenting as the same type or subtype could behave very differently in response to therapy, a novel strategy - Response-guide Radiotherapy (RGRT) is proposed to enable each patient can receive customized treatment. Based on the biological and non-biological responses induced by radiation, radiotherapy is optimized and modified in a feedback way for daily practice, which results in measurable improvements in outcomes and a reduction on health care costs. This approach represents a unique opportunity for integration, increased value in personalized oncology. The increasing availability and growth rate of biomedical information, also known as "big data", provides an opportunity for future RGRT development.