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CANCER THERAPY

Retinoblastoma—chemotherapy increases the risk of secondary cancer

Retinoblastoma (Rb), which is the most-common primary intraocular malignancy among children, arises from mutations in the retinoblastoma gene *RB1*. Although the 5-year survival rate in Rb is 97%, survivors have increased risk of secondary malignant neoplasms (SMN)—bone and soft-tissue sarcoma—owing to their genetic susceptibility and past exposure to radiotherapy. Owing to the high risk of radiotherapy-associated SMN, the treatment of Rb has changed considerably, moving towards increased use of chemotherapy. A group led by Ruth Kleinerman has now evaluated the risk of SMN associated with chemotherapy.

Kleinerman and colleagues analysed a cohort of patients with hereditary Rb diagnosed over seven decades. "Since almost all of the patients with hereditary Rb received radiotherapy and about half also received chemotherapy, we compared the risk of SMN in survivors who had received radiotherapy and chemotherapy (mainly alkylating agents) to survivors who received radiotherapy alone," explains Kleinerman. She continues, "we noted significantly elevated risks of bone cancer and leiomyosarcoma, a soft-tissue sarcoma, in the group that received chemotherapy and radiotherapy." Of note, the high risk of these types of SMN persisted for decades.

Further studies are needed to evaluate the risk of SMN with long-term follow-up periods, and in relation to currently used chemotherapeutic agents "to inform risk–benefit evaluation for current Rb treatments and guide recommendations for future Rb treatment protocols," Kleinerman concludes.

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Original article Wong, J. R. Risk of subsequent malignant neoplasms in long-term hereditary retinoblastoma survivors after chemotherapy and radiotherapy. *J. Clin. Oncol.* doi:10.1200/JCO.2013.54.7844