

Purpose: Childhood cancer is a global health problem that affects nations of every socioeconomic status. The incidence of treatment-induced second malignant neoplasms (SMNs) for these children is high and will increase with years of follow up. Advanced radiotherapy techniques may reduce the risk of SMN, but these techniques are not available in developing countries. The purpose of this study was to compare the predicted SMN risk for a 13-year-old girl who received craniospinal irradiation (CSI) in a developed country versus that if she had been treated in a developing country. **Methods:** Treatment plans were created for the girl on the basis of the standards of care in each country, comprised of 4 proton fields in the developed country and 4 6-MV photon fields in the developing country. Mean organ equivalent dose, HT, values from primary radiation fields were calculated using commercial treatment planning systems in the clinics of the respective countries while HT from stray radiation were determined based on Monte Carlo simulations in the case of proton therapy and on thermoluminescent dosimeter measurements in an anthropomorphic phantom in the case of photon therapy. An organ-, age-, and sex-specific risk model was applied to predict the risk of SMN incidence for each standard of care. **Results:** The predicted risk of SMN incidence was almost a factor of two higher for the standard of care of a developing country using photons versus that of a developed country using protons. The absolute risks were predominated by second thyroid, lung, and other solid cancers. **Conclusion:** Our findings suggest that SMN incidence of children undergoing CSI in developing countries may be improved if they are treated with advanced radiotherapy techniques currently available only in developed countries.