

DENTAL HEALTH FOLLOWING CHILDHOOD EXPOSURE TO IONIZING RADIATION

Angela Chetrit, Cancer & Radiation Epidemiology Unit, Gertner Institute, Sheba Medical Centre, Israel

Yuval Vered, Dept. Community Dentistry, Hebrew University-Hadassah School of Dental Medicine, Jerusalem, Israel

Tova Amitai, Cancer & Radiation Epidemiology Unit, Gertner Institute, Sheba Medical Centre, Israel

Harold D Sgan-Cohen, Dept. Community Dentistry, Hebrew University-Hadassah School of Dental Medicine, Jerusalem, Israel

Hadas Even-Nir, Cancer & Radiation Epidemiology Unit, Gertner Institute, Sheba Medical Centre, Israel

Siegal Sadetzki, Cancer & Radiation Epidemiology Unit, Gertner Institute, Sheba Medical Centre, Israel -Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

Background and aims: Exposure to high doses of ionizing radiation (4-30Gy) in childhood may cause dental abnormalities including root and crown defects, caries and decreased parotid secretions. Data on the effects of lower dose radiation to teeth is sparse. This study aimed to examine the long-term effects of radiation given as treatment for tinea capitis (TC) in childhood on dental health.

Methods: The target population included a subsample of 426 irradiated and 401 non-irradiated subjects from the TC cohort (estimated dose to teeth 0.2-0.4Gy). For each of the 253 irradiated and 162 non-irradiated who agreed to participate, a personal interview and a dental examination were performed. The questionnaire covered socio-demographic parameters, smoking, history of diseases and an oral hygiene habits section. The DMFT (decayed (D), missing (M), and filled (F)) index for permanent teeth was used to determine caries experience. Ordered multivariate logistic regression model was used to assess factors (gender, age, education, income, religiosity, smoking, diabetes, oral hygiene habits, dental visit and radiation status) associated with increasing DMFT values.

Results: Rates of 14.6% and 7.4% for complete missing teeth were found among irradiated and non-irradiated individuals, respectively ($p=0.02$). Irradiated subjects had significantly higher DMFT mean values compared to the non-irradiated (18.6 ± 7.5 vs. 16.4 ± 7.2 , $p=0.003$, respectively). Controlling for the above mentioned covariates, irradiation was associated with a 60% increased risk for high DMFT (95%CI 1.08–2.33). Female gender, primary school education, current smoking and poor oral hygiene were found to be independently associated with high DMFT.

Conclusion: Our data suggest that childhood exposure to relatively low doses of ionizing radiation play a role in late outcomes of dental health. This should be taken into account when discussing the increasing use of diagnostic modalities in medicine in general as well as in dental procedures.