TITLE:
Lifetime Exposure to Fluoride and Risk for Osteosarcoma

HYPOTHESIS/PURPOSE:

The purpose of this study was to determine whether increased exposure to fluoride from systemic and other sources increase the risk of Osteosarcoma in humans.

CONCLUSIONS/SIGNIFICANCE:

Based on the retrospective data analyzed thus far, there is no evidence to suggest that the odds of exposure to fluoride from drinking water or from other sources are higher in Osteosarcoma patients than their controls. On-going analysis with different assumptions of Fluoride levels in bottled water, and specific analysis of Fluoride ingestion during the childhood growth spurt periods will further test the consistency of reported findings.

MATERIAL AND METHODS:

A retrospective hospital-based case-control study was conducted through the Orthopedic Departments at ten teaching hospitals distributed throughout the United States. Patients diagnosed with Osteosarcoma by the participating departments from 11189-11/92 were identified from the patient records. Hospital based controls were matched by age (± 5 yrs.), gender and area code ring of distance from the hospital at the time of diagnosis. Osteosarcoma patients or their controls with any pre-diagnosis history of the known risk factor, radiation therapy, were excluded.

Telephone survey of study participants yielded information on lifetime fluoride exposure, including systemic (municipal, well-water, and bottled water) and other sources of fluoride exposure (toothpaste, mouth rinses at school and home; fluoride tablets, and F-drops) cumulatively up to the eligibility of participants in the study. Fluoride levels in the municipal water supply were obtained from the CDC Fluoridation Census; well-water samples were analyzed for F-levels at HSDM laboratories. Although detailed history of F- exposure from other sources is available, the current analysis used only a binary variable of F-exposure for each of the other sources indicated earlier. Conditional logistic regression with variable number of matched controls per case was used to determine the association between the lifetime exposure to fluoride and Osteosarcoma.

RESULTS:

Data on 454 (cases: 144; controls: 3 IO) were available for analysis. The male to female ratio in cases was (85/59=1.44). The average lifetime exposure to fluoride in drinking water was not significantly different in the population of Osteosarcoma cases in comparison to the population of controls; the odds ratio of Osteosarcoma associated with an average lifetime exposure to fluoride in the drinking water greater than CDC recommended level of 1.0 PPM was 0.94 (CI: 0.57, 1.56). Further, none of the other sources of fluoride exposure tested individually or in combination showed association with Osteosarcoma The conditional odds ratio *and* corresponding confidence intervals are as follows: Home mouth rinse: 0.72 (0.48, 1.08); School mouth rinse: 1.37 (0.75, 2.51); F-tablets: 0.74 (0.38, 1.43): F-drops: 0.16 (0.35, 1.609), and "exposure to any of these fluoride sources": 0.75 (0.49, 1.14).

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