

Fluoride carcinogenesis: The jury is still out!

Dear Editor,

In the October 2012 issue of South Asian Journal of Cancer, Kharab *et al.* have tried to correlate serum and drinking water fluoride levels with osteosarcoma.^[1]

Osteosarcoma derives from primitive bone-forming mesenchymal cells and is the most common primary bone malignancy.^[2] Fluorides are compounds that combine the element fluorine with another substance, usually a metal.^[3]

There are conflicting reports about the carcinogenic potential of fluoride in the literature with osteosarcoma being the cancer about which the most concern has been raised.^[4-11] It was hypothesized that fluoride tends to collect in parts of bones where they are growing; these areas, known as growth plates, are where osteosarcomas typically develop. The theory is that fluoride might cause the cells in the growth plate to grow faster, which might make them more likely to eventually become cancerous.^[9,11]

More than 50 population-based studies evaluating the potential link between water fluoride levels and cancer have been reported in the medical literature. Most of these have not found a strong link to cancer; however, being retrospective in nature, conclusions reached by any single study have to be viewed with caution.^[4-11]

The National Research Council issued an update of its 1993 review in early 2006, which concluded that the evidence on the potential of fluoride to initiate or promote cancers, particularly of the bone, is tentative and mixed.^[7,8] A preliminary report from the Harvard study, published in 2006, suggested that exposure to higher levels of fluoride in drinking water increases the risk of osteosarcoma in boys but not in girls.^[4] However, as these results were not reproducible in a second part of the same study, researchers themselves advised caution in interpreting the report until the full results of the study become available.^[6] The full study is yet to be published.

So far, the general consensus is that there is no strong evidence of a link between water fluoridation and cancer. Several of the reviews noted that further studies, including the full results of the Harvard study, are required to establish or reject the possibility of any such association.^[5,7,8,10]

In this context, observations of this study, although interesting, are largely hypothesis generating due to the small sample size. The proposed hypothesis warrants further testing in larger cohorts in a prospective manner to demonstrate reproducibility of the results. Thus, the jury is

still out and controversy regarding fluoride carcinogenesis remains as such.

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