



THYROID CANCER

Salivary stimulation with vitamin C at any time after I-131 therapy has no major effect on salivary uptake of I-131

WHAT IS THE STUDY ABOUT?

After surgery for thyroid cancer, most patients are treated with radioactive iodine (I-131). This serves two functions: 1) destroy any remaining cancer cells anywhere in the body and 2) destroy any remaining normal thyroid tissue, thus allowing patients to be followed more easily for thyroid cancer return or persistence. I-131 is taken up not only by thyroid tissue, but also some other tissues in the body such as salivary glands. As a result, I-131 can damage the salivary glands, which are very sensitive to radiation. Because of this, the radiation sialadenitis (salivary gland inflammation) and xerostomia (dry mouth) are the most common complications of I-131 therapy, which can even occur with small amounts of I-131. One treatment to reduce the damage of radiation to the salivary glands has been to stimulate salivary flow by sour candies. The aim of this study was to examine if the use of vitamin C as a sour stimulant can decrease damage to the salivary glands by the I-131.

THE FULL ARTICLE TITLE:

Liu et al. Influence of vitamin C on salivary absorbed dose of I-131 in thyroid cancer patients: a prospective, randomized, single-blind, controlled trial. *J Nucl Med* 2010;4:618-23.

WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to examine the use of vitamin C as a sour stimulant to decrease the effect of I-131 to the salivary glands.

WHO WAS STUDIED?

The study group included 72 patients referred to the West China Hospital Department of Nuclear Medicine for radioactive iodine therapy. Patients with extensive thyroid cancer, history of salivary-gland disease, previous I-131 therapy or radiation to the head or neck were excluded from the study.

HOW WAS THE STUDY DONE?

All patients were treated with surgery then were allowed to become hypothyroid in preparation for the radioactive iodine treatment. All patients were treated with 100 mCi

I-131. The patients began sucking on lozenges of 100 mg of vitamin C every 6 hours during the day starting 1, 5, 13 and 25 hours after the I-131 treatment. The amount of I-131 taken up by salivary glands was measured and calculated at 1 to 48 hours after I-131 therapy.

WHAT WERE THE RESULTS OF THE STUDY?

There was no significant difference between the amount of I-131 taken up by salivary glands in any of the 4 groups after I-131 therapy.

HOW DOES THIS COMPARE WITH OTHER STUDIES?

One prior study suggested that the use of lemon candies after I-131 treatment may make the damage worse. However, the group that did not use the candies initially also received other treatment to decrease salivary gland damage. The current study clearly shows that sour stimulation is not harmful; neither does it help. A previous study showed similar results regarding the high frequency of salivary-gland injury after I-131 therapy.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

While this study shows that salivary stimulation with vitamin C at any time after I-131 therapy had no significant effect on I-131 uptake of the salivary glands, more controlled studies are needed to determine whether the use of sour stimulation after I-131 is necessary and if yes, when and what amount should be used. Further, because this study included only patients that were allowed to become hypothyroid before I-131 treatment, similar studies should be done on patients prepared with recombinant human TSH for I-131 therapy.

— Jamshid Farahati, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.html

Thyroid Surgery: http://thyroid.org/patients/patient_brochures/surgery.html

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THYROID CANCER, continued

ABBREVIATIONS & DEFINITIONS

Thyroidectomy — Surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy.

Radioactive iodine (RAI) — this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (Thyroid Scan) or to take pictures of the whole body to look for thyroid cancer (Whole Body Scan).

mCi — millicurie, the units used for I-131.

Recombinant human TSH (rhTSH) — human TSH that is produced in the laboratory and used to produce high levels of TSH in patients after an intramuscular injection. This is mainly used in thyroid cancer patients before treating with radioactive iodine or performing a whole body scan. The brand name for rhTSH is Thyrogen™.

Sialadenitis — inflammation of salivary gland.

Xerostomia — dry mouth due to lack of saliva, frequently observed after radiation to the head and neck and after I-131 therapy.