Mahidol University
Faculty of Medicine Ramathibodi Hospital

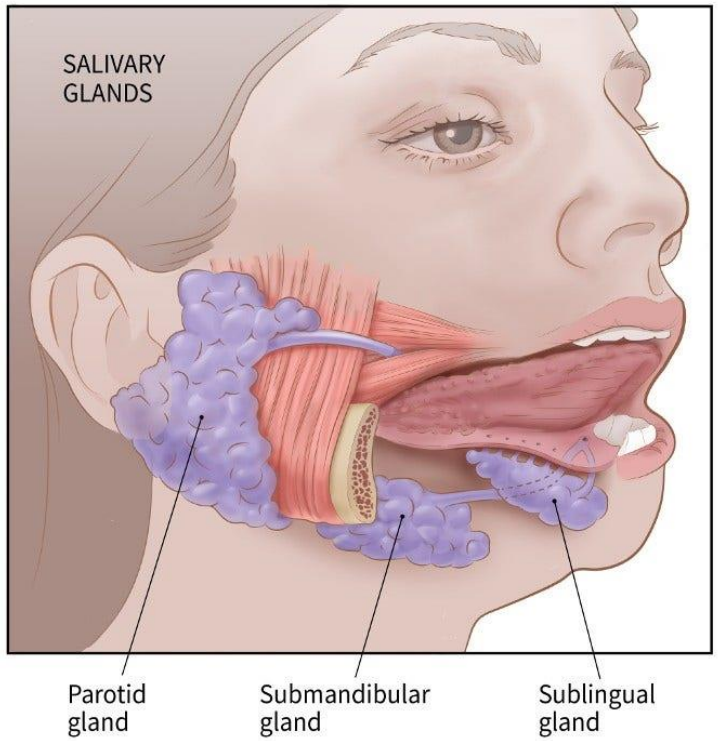
Salivary gland cancer in PTC patients

F1 Similan Kirisri

Salivary gland cancer

- Salivary gland cancers are not very common
- 6-8% of all head and neck cancers in the US
- They occur at a rate of about 3 cases per 100,000 people per year in the Western world
- 5-year relative survival rate for a specific stage of salivary gland cancer is 90%

- Types of salivary gland cancers
  - Mucoepidermoid carcinomas (most common)
  - Adenoid cystic carcinoma: (second most common)
  - Acinic cell carcinoma
  - Polymorphous adenocarcinoma
  - Adenocarcinoma, not otherwise specified (NOS)
  - Secretory carcinoma (Mammary analogue secretory carcinoma)



Common site: parotid glands > submandibular > sublingual > minor salivary glands

American cancer society. 2022.

Risk factors of salivary gland cancer

Older age

Radiation exposure

- Radiation treatment to the head and neck especially if salivary glands were not protected during the radiation
- Workplace exposure to certain radioactive substances

Smoking

Other possible risk factors

(may be at increased risk for salivary gland cancer, but these links are not certain. The rarity of these cancers makes this hard to study)

? Certain workplace exposures: metals (nickel alloy dust) or minerals (silica dust), asbestos mining, plumbing, rubber products manufacturing, and some types of woodworking

? Viral infections:

- high-risk types of HPV has been found in some mucoepidermoid cancers
- HIV
- Epstein-Barr virus: Lymphoepithelial cancer, a very rare type of salivary gland

? Diet: low in vegetables and high in animal fat

? Cell phone use

Laurie SA. Salivary gland tumors: Epidemiology, diagnosis, evaluation, and staging. In: Shah S, ed. UpToDate. Waltham, Mass.: UpToDate, 2021.
National Cancer Institute. Physician Data Query (PDQ). Salivary Gland Cancer: Treatment. 2019. Accessed at https://www.cancer.gov/types/head-andneck/hp/adult/salivary-gland-treatment-pdq on Nov 29, 2023.
Sadetzki S, Chetrit A, Jarus-Hakak A, et al. Cellular phone use and risk of benign and malignant parotid gland tumors--a nationwide case-control study. Am J Epidemiol. 2008; 167:457-467.

Salivary gland cancer incidence in patients with thyroid cancer treated and nor treated with Radioactive iodine

	Study population		*Salivary gland cancer*			
Reference	*RAI*	*No RAI*	*RAI*	*No RAI*	*Mean duration of follow-up*	*Comments*
7	10,349	18,882	4	0	55.5 months	RAI treatment is not associated with SPM.
8	846	651 (only diagnostic doses of RAI)	1		10 years	No increased risk of salivary gland cancer; increased risk of colorectal cancer. Strong relationship between the cumulative activity of RAI and colorectal cancer.
2	834	1121	3	0	14 years	Significantly elevated risk for salivary gland cancer.
3	730	201	3	0	7.44 years	Increased risk of salivary gland carcinoma in patients treated with RAI.
4	4225 + external beam radiation 1194	3031	6	2	>10 years	Increased relative risk of salivary gland cancer after RAI. Strong relationship between the cumulative activity of RAI and salivary gland cancer.
5	282	0	1	0	10.6 years	Overall increased standarized incidence rate for SPMs, but not connected with RAI.
1	10,257	18,029	3	11	8.6 years	Increased risk of SPMs in well-differentiated thyroid cancer compared to general population.

RAI, radioactive iodine; SPMs, second primary malignancies.

High-dose RAI administration has been linked to an increased risk of tumors of the salivary gland

Hall P, et al. Cancer risks in thyroid cancer patients. Br J Cancer **64. 1991:**159–163.

Dottorini ME, et al. Assessment of female fertility and carcinogenesis after iodine-131 therapy for differentiated thyroid carcinoma. J Nucl Med **36. 1995:**21–27.

Rubino C, et al. Second primary malignancies in thyroid cancer patients. Br J Cancer **89.** 2003:1638–1644.

Klubo-Gwiezdzinska J, et al. Salivary gland malignancy and radioiodine therapy for thyroid cancer. Thyroid. 2010 Jun;20(6):647-51.

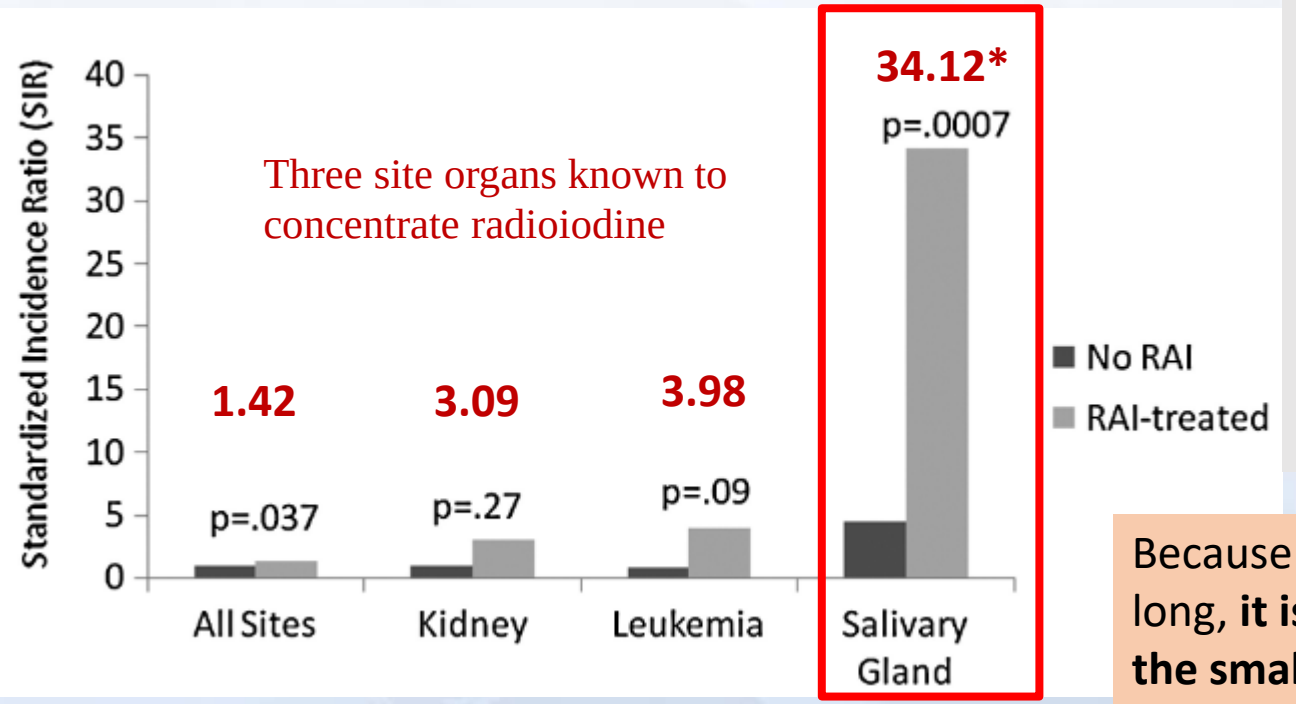
THYROID RADIOLOGY AND NUCLEAR MEDICINE

Increased Risk of Second Primary Malignancy in Pediatric and Young Adult Patients Treated with Radioactive Iodine for Differentiated Thyroid Cancer

Jennifer L. Marti[1], Kunal S. Jain[2], and Luc G.T. Morris[2]

Mahidol University
Faculty of Medicine Ramathibodi Hospital

The risk of SPM in pediatric and young adult patients (age<25 years) treated for DTC, with or without RAI



- A total of three salivary gland cancers were observed, corresponding to a SIR of 34.12 ([90% CI 9.1–69.9], *p*=0.0007)
- **Over a decade, approximately**
  - 1 in 227 RAI-treated patients will develop an SPM
  - **1 in 588 RAI-treated patients will develop a salivary cancer**
- The **median latency** for the development of a second cancer in the salivary gland was **10 years**
- **2/3 mucoepidermoid cancers, 1/3 an acinic cell carcinoma**
- **2/3 of the salivary cancers were localized**, and **one had distant metastases** at the time of presentation
- No patients had died of salivary cancer at most recent follow-up

Because the expected survival time for young DTC patients is long, **it is critical to weigh the benefits of RAI carefully against the small, but real, increase in SPM risk**

Marti JL, et al. Increased risk of second primary malignancy in pediatric and young adult patients treated with radioactive iodine for differentiated thyroid cancer. Thyroid. 2015 Jun;25(6):681-7.

RAI therapy and the risk of secondary malignancies

- The risk of secondary malignancies is dose related
- Cumulative I131 activities above 500-600 mCi associated with a significant increase in risk (clearly increased risk in >600 mCi)
- No direct evidence of increase risk of secondary malignancies after single administration of 30-100 mCi in comparison to the observed in thyroid cancer patients who have not been treated with I131

ATA 2015.
Rubino C, ET AL. Schlumberger M 2003 Second primary malignancies in thyroid cancer patients. Br J Cancer 89:1638–1644.
Iyer NG, et al. 2011 Rising incidence of second cancers in patients with low-risk (T1N0) thyroid cancer who receive radioactive iodine therapy. Cancer 117:4439–4446.

[C33] How should patients who have received RAI therapy be monitored for risk of secondary malignancies?

RECOMMENDATION 86

Although patients **should be counseled on the risks of second primary malignancy** with RAI treatment for DTC, the **absolute increase in risk of developing a second primary malignancy** attributable to RAI treatment **is considered small** and does not warrant specific screening to any extent greater than **age-appropriate general population health screening.**

(Weak recommendation, Low-quality evidence)

ATA 2015