

Artifact from ¹³¹I contaminated mask in post-radioiodine therapy scintigraphy

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Abstract:

A patient wearing the mandatory face mask because of the ongoing COVID-19 pandemic underwent post-radioiodine therapy scintigraphy. The spot view of the neck showed an area of uptake that was later demonstrated to be caused by contamination of the mask. This finding has led to updating the scan procedure for post-therapy scintigraphy by replacing the patients' masks before the scan acquisition.

Keywords: 131I, artifact, face mask, post-therapy scintigraphy

Introduction:

Guidelines for radioiodine therapy (RAIT) of differentiated thyroid cancer recommend that a whole-body scintigraphy should be performed following every RAIT. The aim of post-RAIT scintigraphy is to characterise the extent of thyroid remnant but also to detect unknown lesions. Areas of focal iodine uptake outside the physiological ones are suggestive of metastatic disease, albeit radioactive contamination artifacts in ^{131}I imaging after RAIT are a known issue (1).

Case Report:

A patient treated with 2960 MBq of ^{131}I to ablate thyroid remnant was referred for the post-therapy scintigraphy five days after RAIT administration. Due to the ongoing COVID-19 pandemic, the patient was required to wear a face mask during his permanence in the hospital. Mask was kept on during the whole imaging acquisition procedures.

After the whole-body scan, an anterior spot view of the neck, including the latero-cervical region and part of the chest, was acquired as required by the protocol in use.

Iodine uptake was found in the residual thyroïdal tissue in the neck, as well as in the mucosae of the nose and mouth. An area of intense iodine uptake below the right corner of the patient's mouth was also present (Figure 1).

Given the unusual appearance of the iodine distribution pattern, the technologist suspected a possible artifact due to iodine contamination of the mask.

Therefore, the patient was given a new mask to wear and the scan was repeated.

Newly acquired spot view showed the disappearance of the high-activity area (Figure 2).

Lateral views also demonstrated a physiological distribution of radioiodine.

Discussion:

Contamination artifacts in ^{131}I imaging are often due to body secretions, perspiration, or saliva (2,3). In particular, radioactive iodine can be detected in patients' saliva up to two weeks after RAIT (4).

In a recently reported artifact linked to a contaminated face mask, the abnormal iodine distribution was considered due to ^{131}I presence in the exhaled air remaining in the mask (5). Given the intense activity shown on the scintigraphy, our finding more likely refers to salivary imbibition after prolonged use of the same mask than to exhalation only.

If not recognized as an artifact, further characterization of the area of uptake would have been required. Differential diagnosis should have included increased uptake in the right sublingual or submandibular glands, metastatic lymph node or bone metastasis of the mandible.

Conclusion:

Unusual patterns of iodine distribution on post-RAIT scintigraphy must be accurately evaluated. Patients undergoing post-RAIT scintigraphy in our hospital are currently asked to wear a new mask just before the scan begins. Used masks are disposed of as radioactive waste.

Disclosure:

No potential conflict of interest relevant to this article was reported.

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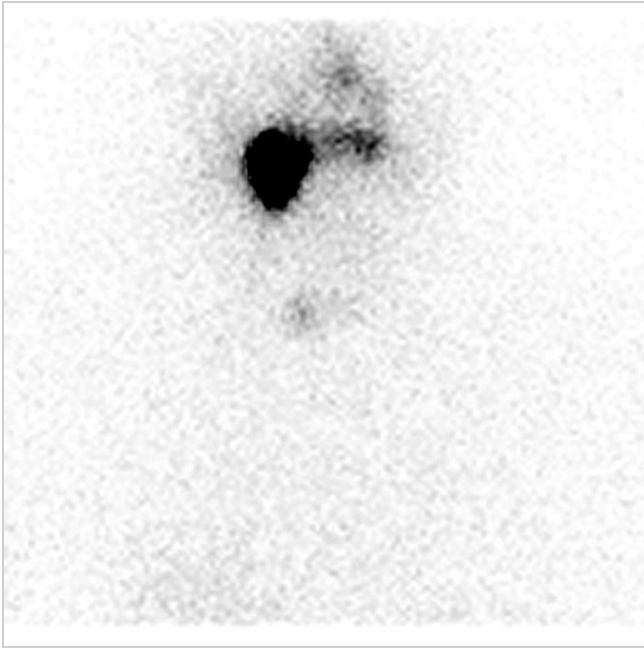


FIGURE 1. Post-RAIT spot view of the neck shows a hotspot below the right corner of the patient's mouth.

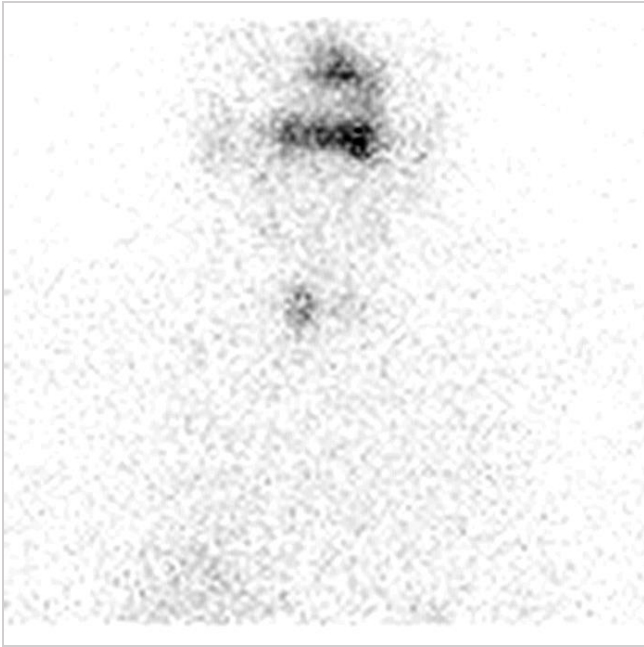


FIGURE 2. Spot view of the neck acquired while the patient was wearing a new mask. The hotspot has disappeared.