
Contamination of a Bracelet Following Iodine-131 Therapy: A Case Report

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A 73-y-old patient who had thyroid carcinoma had a post-treatment, whole-body ^{131}I scan. The scan demonstrated an artifact caused by a bracelet contaminated with radioactive perspiration. This finding resulted in an artifact on the scan and had potential radiation safety implications.

Key Words: iodine-131; artifact; perspiration; radiation exposure

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This patient was a 73-y-old woman who was diagnosed with thyroid carcinoma in 1992. She had a total thyroidectomy and radioiodine ablation with 150 mCi (5.55 GBq). A subsequent whole-body scan showed no residual disease. Seven years later, because of an increasing thyroglobulin level and a suspicion of recurrent disease, a diagnostic scan was performed and followed by a 150-mCi ^{131}I treatment. At 11 d post-treatment, the patient returned for a whole-body scan.

In addition to the neck uptake, the scan showed linear increased uptake across the right forearm (Fig. 1). A gold bracelet on the arm corresponded to the area of increased activity. The patient stated that she always wore that particular piece of jewelry and had not taken it off (except when washing herself) since her treatment dose. The gold bracelet itself was unremarkable having been purchased several years ago in a department store.

The bracelet was removed and imaged under the 364-keV peak (Fig. 2). It also was monitored with a pancake probe monitor. The initial reading was 20 mR/h. After it was washed thoroughly with water and Radiactwash (Biodex, Shirley, NY), it was remeasured. The subsequent reading was 4 mR/h. These findings would suggest that the radioactivity was related to radioactive perspiration that was present on the bracelet. The bracelet was put in a plastic container and returned to the patient

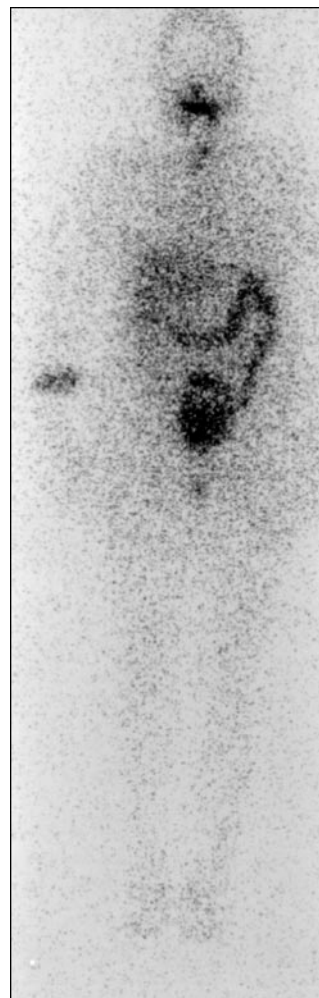


FIGURE 1. Post- ^{131}I therapy whole-body scan. Linear uptake at the right forearm was present.

with instructions not to wear it or lend it to anyone for several weeks until the radioactivity had decayed.

DISCUSSION

Several studies have described potentially false-positive findings after radioiodine treatment. Most such artifacts are due

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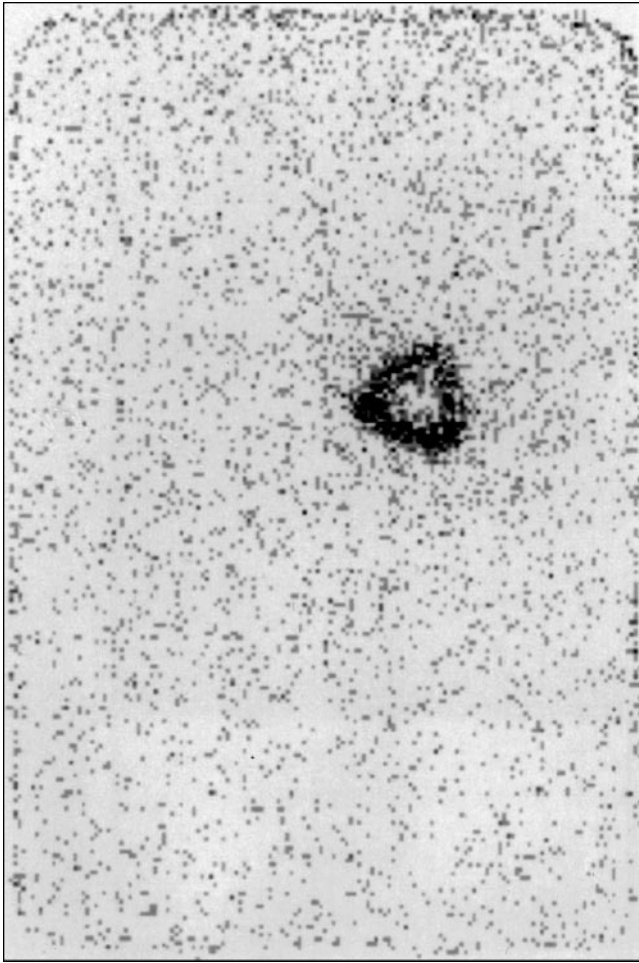


FIGURE 2. Image of patient's bracelet.

to perspiration (1–5). Cases where saliva, urine, or other body fluids can produce artifacts also have been described (6–12). In the present case, the appearance was not typical of a metastatic lesion and was identified correctly as an artifact with little

difficulty. In cases such as this one, the potential problem of unwanted radiation exposure from contaminated objects also must be addressed.

CONCLUSION

Radioactive contamination from perspiration is important to recognize, not only from a diagnostic point of view but also because of the potential of unwanted radiation exposure.

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