Iododerma after radioiodine therapy in CA thyroid: a case report

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ABSTRACT

Background: Iodine-131 (I-131) therapy is a well-established method for the treatment of differentiated thyroid cancer [carcinoma (CA)]. Following such therapy, patients may experience complications classified as early/intermediate or delayed side effects. We report an unusual side effect after oral I-131 therapy in the form of a skin eruption (iododerma).

Case Presentation: We describe a case of a 60-year-old female, presented with pustular lesions all over skin after radioiodine therapy for CA thyroid. On the basis of history and clinical examination, diagnosis of iododerma was made.

Conclusion: Iododerma is a very rare complication of radioiodine therapy. When pustular lesions develop after radioiodine therapy, iododerma should be kept in mind after the exclusion of other differentials. It appears within 4–6 weeks after therapy and is a self-limiting condition.

Keywords: Iododerma, radio-iodine therapy, CA thyroid, case report.

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Background

Iodine-131 (I-131) is an essential treatment strategy for hyperthyroidism and thyroid cancer. Although the radioiodine therapy is generally safe, the patients may experience symptoms relating to early or late side effects. Precautionary measures can be taken to minimize or reduce these complications [1,2]. Iododerma is a rare complication of the I-131 therapy which is seen in the form of cutaneous lesions.

Iododerma is a dermatological lesion caused by oral, intravenous, or topical administration of iodides [3]. These skin lesions can be acneiform, erythematous, urticarial, hemorrhagic, vesiculobullous, pustular, carbuncular, petechial, or nodular. Commonly seen is acneiform lesion which is inflammatory follicular eruptions in the form of pustules [4].

Case Presentation

A 60-year-old female was referred to our department for radioiodine therapy. She was a diagnosed case of carcinoma (CA) thyroid. Thyroidectomy was done and the first dose of radioactive iodine (RAI) was given after 2 months of surgery. The patient was non-compliant and lost follow-up. Later the patient came after 8 years with bone and lung metastasis, the second dose of 7,400 Megabecquerel (MBq) was given and intravenous bisphosphonates were started as well. The third dose of 5,920 MBq was given 2 years after the second dose. Two weeks after the third dose, the patient developed numerous pustules and bullae on the trunk and limbs. Initially, the lesions were few in number but they rapidly spread all over the body.

On examination, there were hemorrhagic, palpable, large vegetative plaques. Rest of her physical examination was normal. Laboratory tests [complete blood counts and Immunoglobulin E (IgE)] were normal. History and clinical course supported the diagnosis of I-131 therapy-induced iododerma. The patient was treated with a topical cream (flumethasone and salicylic acid) and oral antihistamines. The patient's lesions resolved gradually, leaving only post-inflammatory hyperpigmentation (Figure 1).

Discussion

Surgery followed by radioiodine therapy is an effective standard treatment in differentiated CA thyroid patients [5]. Radioiodine therapy is generally safe, but may be associated with complications, classified as acute (early) and late adverse effects [6]. Early complications include neck pain, swelling, tenderness, nausea/vomiting, thyroiditis, sialadenitis, xerostomia, and bone marrow (BM) suppression. Late complications include chronic sialadenitis, permanent BM suppression, pulmonary fibrosis, secondary malignancies, and impaired fertility [7]. Iododerma is a rare complication following the radioiodine therapy. Paul et al. [8] first in 2005 reported a case of iododerma after the radioiodine therapy for hyperthyroidism.

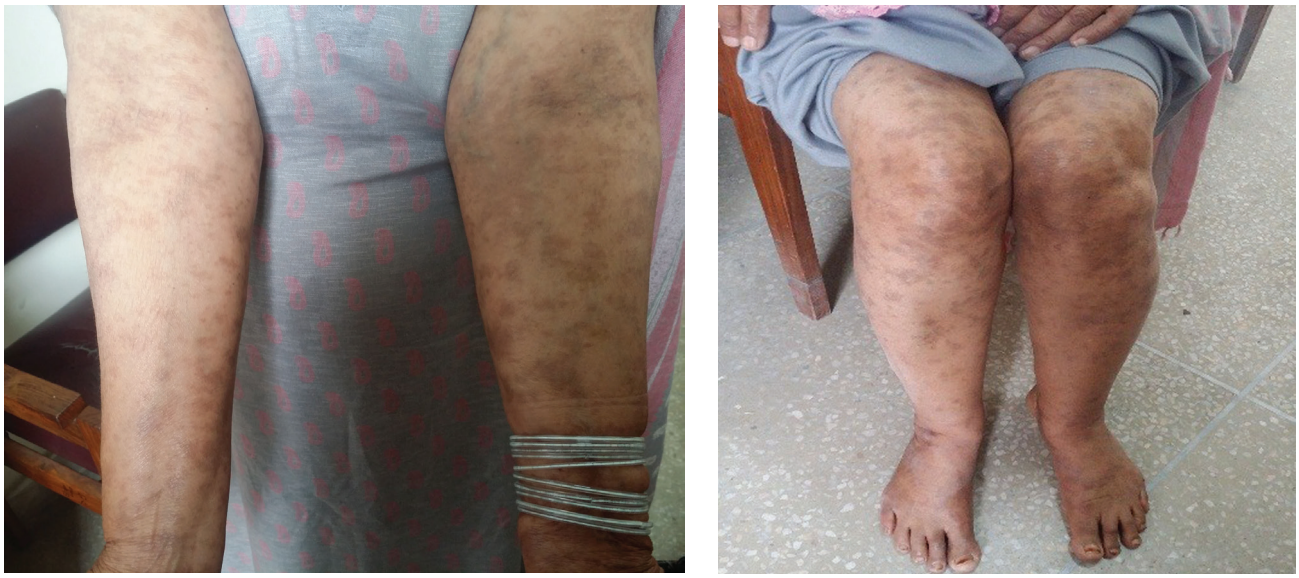

Figure 1. *Post-inflammatory hyperpigmentation on upper and lower limbs.*

Iododerma is an uncommon drug reaction that occurs after systemic or oral intake of iodine. It is diagnosed on the basis of history, the clinical examination of characteristic cutaneous lesions, and the exclusion of other differentials as no laboratory or histopathology finding is pathognomonic [9,10].

Typically, the lesions begin as papules or pustules on the face or scalp and then extend to involve the neck, back, and extremities. It most commonly affects the areas having a higher concentration of sebaceous glands. However, the mucous membrane may be involved [11].The exact pathogenesis is unknown; however, hypersensitivity reaction to iodine, delayed iodine clearance, and leukocytes invasion are proposed possible mechanisms [3]. Clinical history and histopathology are considered to be the gold standard for diagnosis [11].

Case reports on iododerma with fatal outcome have been rarely reported. This may be due to the fact that the amount of iodine [as sodium iodide (20 µg of iodide per 100 mCi)] in RAI is many-fold smaller than that in a standard CT contrast dose (350 mg of iodide per ml) [12]. Iododerma after the radioiodine therapy is a self-limiting condition. However symptomatic treatment may be required for some types of lesions. Corticosteroids, antihistamines, or anti-inflammatory agents may be administered in a few cases [13].

Conclusion

Iododerma following the oral radioactive iodine administration is rarely reported. Clinicians need to know about possibilities of developing the skin lesions before administering iodine therapy. Knowledge of iododerma and its early identification is essential to avoid unnecessary treatment; thereby improving the overall management of the patient.

Acknowledgement

None.

List of abbreviation

CA	Carcinoma
MBq	Megabecquerel
RAI	Radioactive iodine

Consent for publication

Informed consent was obtained from the patient to publish this case.

Ethical approval

Ethical approval is not required at our institution for publishing a case report in a medical journal.

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References

1. Lee SL. Complications of radioactive iodine treatment of thyroid carcinoma. J Natl Compr Canc Netw 2010; 8(11):1277–86. https://doi.org/10.6004/jnccn.2010.0094
2. Bonnema SJ, Hegedus L. Radioiodine therapy in benign thyroid diseases: effects, side effects, and factors affecting therapeutic outcome. Endocr Rev 2012; 33(6):920–80. https://doi.org/10.1210/er.2012-1030
3. Chalela JG, Aguilar L. Iododerma from contrast material. N Engl J Med 2016; 374:2477. https://doi.org/10.1056/NEJMicm1512512
4. Aquilina JT, Bisseil GW. Fungating iododerma treated with hydrocortisone. JAMA 1955; 158(9):727–30. https://doi.org/10.1001/jama.1955.02960090021005b
5. Hanscheid H, Lassmann M, Luster M, Thomas SR, Pacini F, Ceccarelli C, et al. Iodine biokinetics and dosimetry in radioiodine therapy of thyroid cancer: procedures and

results of a prospective international controlled study of ablation after rhTSH or hormone withdrawal. J Nuc Med 2016; 47(4):648–54.
6. Esfahani AF, Ardekania AE, Fallahi B, Esfahani PF, Beiki D, Rad AH, et al. Adverse effects of radioactive iodine-131 treatment for differentiated thyroid carcinoma. Nuc Med Communications 2014; 35:808–17. https://doi.org/10.1097/MNM.0000000000000132
7. Albano D, Bertagna F, Panarotto MB, Giubbini R. Early and late adverse effects of radioiodine for pediatric differentiated thyroid cancer. Pediatr Blood Cancer 2017;64:e26595. https://doi.org/10.1002/pbc.26595. https://doi.org/10.1002/pbc.26595
8. Paul AK, Al-Nahhas A, Ansari SM, Islam N. Skin eruptions following treatment with Iodine-131 for hyperthyroidism: a rare and un-reported early/intermediate side effect. Nucl Med Rev Cent East Eur 2005; 8(2):125–7.
9. Suh KS, Park JB, Han SH, Kim ST, Jang MS. Iododerma following radioactive iodine ablation of the thyroid for thyroid cancer. Korean J Dermatol 2013; 51(1):53–6.
10. Lazaga F, Agarwal A, Erdman W, Oz O. A rare case of iododerma after therapy with oral Iodine-131. J Nucl Med 2011; 52(1):1320.
11. Ramdial PK, Naidoo DK. Drug-induced cutaneous pathology. J Clin Pathol 2009; 62:493–504. https://doi.org/10.1136/jcp.2008.058289
12. Perrin, Jackson M, Grant R, Lloyd C, Chinaka F, Goh V. Weight-adapted iodinated contrast media administration in abdomino-pelvic CT: Can image quality be maintained? Radiography 2018; 24:22–7. https://doi.org/10.1016/j.radi.2017.08.011
13. Crowson AN, Brown TJ, Magro CM. Progress in the understanding of the pathology and pathogenesis of cutaneous drug eruptions: implications for management. Am J of Clin Dermatol 2003; 4(6):407–28. https://doi.org/10.2165/00128071-200304060-00005

Summary of the case

Patient (gender, age)	1	60-year-old female
Final Diagnosis	2	iododerma
Symptoms	3	Pustular lesions on the skin
Medications	4	Steroids, anti-histamines
Clinical Procedure	5	Oral radioiodine therapy
Specialty	6	Nuclear medicine