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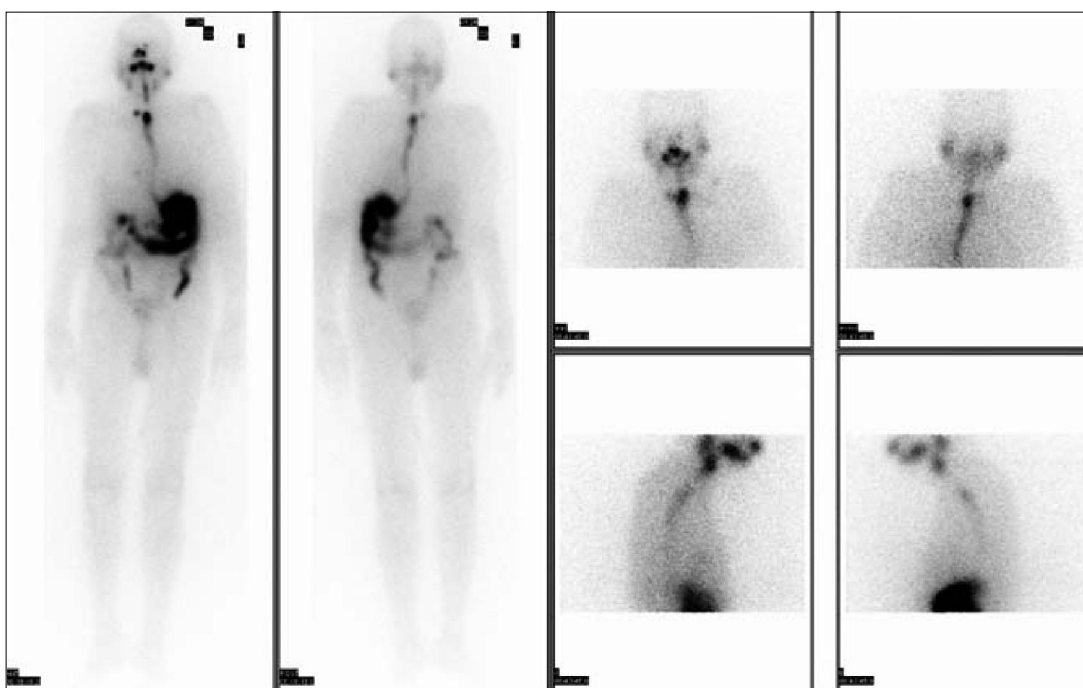
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PJR July - September 2015; 25(3): 131-132

History

A 75 year old male has had total thyroidectomy for papillary thyroid cancer with a complicated post-operative course with persistent swallowing difficulty. He was planned to receive 100 mCi of liquid radioiodine-131 and this is a 96 hours delayed post-ablative scan.



Questions

- Q1. Describe the scan findings?
- Q2. What are the possible limitations?
- Q3. What is a better alternative in this clinical scenario?

QUIZ

Answers

Answer 1: This whole body scan and spot static images shows a linear shaped tract of radioactivity extending from the nasal region up to stomach and this represents a nasogastric tube which was used to administer liquid I-131 due to swallowing difficulty as mentioned above. In the neck region 02 well defined foci of intense uptake are seen, the larger and hotter one is in alignment with NG tube and shows stagnant intraluminal activity while the smaller focus in lower cervical region is consistent with an iodine avid thyroid or nodal tissue. Normal tracer distribution is seen in bowel loops, nasopharynx and salivary glands.

Answer 2: Most important limitation is adsorption of liquid Iodine-131 by NG tube and smaller than estimated amount of radiotracer dose would be available to be absorbed by stomach. The other limitation is persistent radiation exposure to care giver from I-131 adhered to NG tube.

Answer 3: Use of I-131 capsule deployed by NG tube or by an endoscope into stomach would avoid above mentioned limitation.

Discussion

Radioiodine-131 (RAI) is used in thyroidectomized patients with well differentiated thyroid cancers for ablation of residual disease tissue or for therapy for recurrent or distant functioning metastases. RAI is available in two forms. Liquid form which is most commonly used due to flexibility in preparing the dose for an individual patient from a large pool but associated with risk of contamination and radiation exposure to technologist during dose preparation and administration.¹ Capsule containing a prescribed dose are prepared by vendors on request are less commonly used, less cost effective but ensures low risk of contamination and exposures to technologist.

RAI administration in non-cooperative patients or patients with mentally or psychiatric disorder or persons with swallowing difficulty or severe neurologic impair-

ment is a challenge. Liquid RAI gets adhered to tubing and results in uncertainty about the dosing and possibly suboptimal therapeutic outcome.²

References

1. Lowry PA, Semenkovich JW, Scott LD, Zeck OF, Desai A, Lavis VA. Administration of 131I Capsule via Nasogastric Tube in an Uncooperative Patient with Graves Disease. *AJR* 1990; **155**: 611-2.
2. Buton L, Morel O, Gault P, Illouz F, Rddien P, Rohmer V. False positive I-131 whole body scan findings in patients with differentiated thyroid carcinoma: Report of 11 cases and review of the literature. *Annales d'Endocrinologie* 2013; **74**: 221-30.