False-positive orbital uptake on $^{131}$I scintigraphy due to ocular prothesis

To the Editor: After $^{131}$I radioablative treatment, $^{131}$I whole body scintigraphy shows the degree of $^{131}$I uptake and determines the metastases. Extra-thyroidal $^{131}$I accumulation does not always imply thyroid cancer metastases [1]. In order to avoid unnecessary therapeutic interventions it is extremely important to properly distinguish false-positive sites of $^{131}$I localization [2]. In this case, we present false-positive orbital $^{131}$I uptake due to the presence of ocular prothesis.

A 75 year old man with ocular prothesis in the left orbit underwent total thyroidectomy for papillary thyroid cancer and ablation therapy with 370 MBq therapeutic dose of $^{131}$I. Whole body scintigraphy (Fig. 1A) and lateral cranial static images (Fig. 1B) obtained 5 days after the therapeutic dose of $^{131}$I revealed three areas of focal increased uptake in the thyroid bed compatible with residual thyroid tissues (arrow head), and a focal uptake in the left orbit (arrow). Two days later, after the removing of the ocular prothesis and cleansing of the face periodically, $^{131}$I uptake in the left orbit was disappeared on anterior (Fig. 1C) and lateral cranial static images (Fig. 1D).

False positive findings on $^{131}$I scintigraphy may result from radiopharmaceutical contamination of skin or clothing from saliva, mucus, sweat, milk, urine or faeces [3]. False positive radioiodine uptake caused by sinusitis, dacrystitis, meningiomas, frontal sinus mucocel, sialoadenitis, periodontal disease, lingual thyroid was described in the literature [4-11].

The lacrimal glands and drainage system normally aren’t seen on $^{131}$I scintigraphy [12]. This is most probably because of the low uptake and the small size of the lacrimal gland, coupled with the small volume of the tear and the low tear-flow rate, beside the high turnover rate of the tear and the patent lacrimal system [12]. The impairment of these mechanisms may explain the accumulation of radioiodine in the tears that accumulated behind ocular prothesis [12]. The increased activity is most likely caused by poor elimination of the tear due to ocular prothesis. Having knowledge of potential false positive causes of $^{131}$I uptake is significant in the proper interpretation of $^{131}$I scintigraphy. Ocular prothesis may cause false positive orbital $^{131}$I uptake in the $^{131}$I scintigraphy that may be confused with orbital or cranial metastases.

Bibliography


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