

유즙분비가 있는 갑상선암 환자에서 I-131 치료

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= Abstract =

Radioiodine Therapy in a Patient with Papillary Thyroid Carcinoma associated with Breast Uptake; Hyperprolactinemia due to Empty Sella Syndrome

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We report a 37 year-old-female patient with papillary thyroid cancer treated by surgery who demonstrated residual thyroid and bilateral breast uptake on a diagnostic I-131 whole body scan. She had an extrathyroidal extension needing I-131 ablative therapy. Her galactorrhea was investigated and treated with low doses of bromocriptine prior to I-131 therapy. Her galactorrhea was due to the decreased secretion of PIF induced by empty sella. (Korean J Nucl Med 1998;32:109-113)

Key Words: Hyperprolactinemia, Galactorrhea, Empty sella, Papillary thyroid cancer, I-131

Introduction

Radioiodine, used routinely in the diagnosis and treatment of well differentiated thyroid cancer (WDTC), is known to be taken up by the lactating breasts¹⁻⁴⁾. Although, the radionuclide uptake in non-lactating women is not well recognized, this may result from hyperprolactinemia. Many causes of pathological hyperprolactinemia such as hypo-

thalamic disease, pituitary diseases including prolactinoma, acromegaly, Cushing's disease, pituitary stalk section and empty sella, the effects of drugs, primary hypothyroidism, and chronic renal failure are known. We experienced a case showing breast uptake in a patient with papillary thyroid carcinoma on diagnostic I-131 whole body scan. The patient was proven to have empty sella with mild hyperprolactinemia and galactorrhea, which was treated by low dose bromocriptine prior to I-131 ablation therapy, and the patient's empty sella was responsible for radioiodine uptake by the breasts.

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Fig. 1. I-131 diagnostic scan. Anterior views(left upper, lower, and right upper quadrants) of neck, chest and abdomen demonstrate residual neck and breast uptake bilaterally. Right lateral view(right lower quadrant) confirms the breast uptake.

Case Report

A 37 year-old-female patient with papillary cancer of the thyroid gland treated by a total thyroidectomy was referred for an I-131 ablation therapy because of extrathyroidal involvement. She had a diagnostic scan before I-131 ablative therapy which showed bilateral intense breast uptake(Fig. 1). She denied any menstrual disturbance but had mild galactorrhea. Her serum prolactin level and thyroid function tests were checked and demonstrated the following: triiodothyronine(T3) 28(g/ml (normal range: 80-220), free thyroxine(T4) <0.2ng/ml(6.1-

11.8), thyrotrophin(TSH) 40(gIU/ml(0.3-5.0), and prolactin(PRL) 41.9ng/ml(0-20). CT scan of the pituitary gland performed to rule out prolactinoma demonstrated empty sella instead(Fig. 2). She was treated with bromocriptine 2.5mg twice daily for 1 month after which laboratory investigation demonstrated a decreased PRL level of 25.8ng/ml. Galactorrhea was not present at that time and a repeat diagnostic scan using I-131 did not show any uptake in the breast but rather in the thyroid bed. She then received an ablative dose of I-131 as an inpatient and a follow-up scan in about one year failed to show any residual or metastatic uptake.

Fig. 2. CT scan of the pituitary fossa(coronal view) shows empty sella(arrows).

Discussion

The mechanism of breast uptake of radioiodine remains unclear. Radioiodine is known to be excreted in breast milk⁶⁻⁸⁾, the production of which is regulated by prolactin⁹⁾. Thus, radioiodine breast uptake is common in the early post-partum period and during lactation which are associated with elevated prolactin level. Galactorrhea in patients who are not post partum, is present in 30-90% of hyperprolactinemic women¹⁰⁾. Other causes of hyperprolactinemia are hypothalamic disease, pituitary disease such as prolactinoma^{9, 11)}, the effect of drugs^{12, 13)}, hypothyroidism^{9, 14-16)}, and breast stimulation^{17, 18)}. On recent study⁵⁾ reported that radioiodine breast uptake was noted at least one occasion in about 6% of non-breast feeding hypothyroid female patients with differentiated thyroid cancer. However, not all the patients whose diagnostic scan show I-131 uptake in the breasts have galactorrhea or hyperprolactinemia. Only 48%

of non-lactating women with I-131 breast uptake may have galactorrhea and, 76% of them did not show an elevated prolactin level.

Empty sella is characterized by an intrasellar herniation of the suprasellar subarachnoid space and cerebrospinal fluid through an incomplete diaphragma sella. It may be primary or secondary. It is occasionally associated with hyperprolactinemia by stalk stretching or coincidental microprolactinomas. A study of 33 patients diagnosed with primary empty sella turcica reported hyperprolactinemia to be the most frequent finding(23.3%) after a hypophyseal function study¹⁹⁾. This result was explained by impaired secretion of hypothalamic prolactin inhibiting factor(PIF).

Hypothyroidism may be another explanation for the hyperprolactinemia of these patients. The incidence of significant hyperprolactinemia due to primary hypothyroidism varies between 0-25%^{20, 21)}. Although the incidence of pituitary enlargement in primary hypothyroidism associated with hyperprolactinemia is not known, severe hypothyroidism

may rarely be associated with hyperprolactinemia and an enlarged pituitary gland¹⁶⁾. Thyroxine replacement therapy in patients with primary hypothyroidism will result in normalization of the high PRL and TSH levels and shrinkage of the pituitary gland. Very rarely may an empty sella develop only in patients with abnormal diaphragma sella¹⁶⁾. Bromocriptine, an ergot derivative with dopamine agonist actions, decreases the level of prolactin and reverts the galactorrhea and I-131 breast uptake. This finding suggests that the breast uptake of this patient is directly related to the same mechanism as in the excretion of radioiodine in breast milk.

The breast uptake of radioiodine can potentially be misinterpreted as lung metastases from thyroid cancer when a history of breast feeding is not obtained. In this situation, a lateral view can distinguish lung metastasis from breast uptake. Hyperprolactinemia, along with other possible causes, should be suspected in female patients with breast uptake of I-131 and should be investigated prior to I-131 therapy in order to avoid unnecessary breast irradiation.

요 약

진단적 I-131 스캔에서 유방의 섭취는 주로 수유 여성에서 보인다고 알려져 있으나 수유 여부와는 관련 없이 나타나는 경우도 보고되어 있다. 갑상선 압으로 갑상선 절제술 후 I-131 치료를 위해 시행한 진단적 스캔에서 유방의 섭취를 보인 환자에서 고프로락틴 혈증에 의한 유류증의 발견 및 이를 근거로 한 뇌 단층 촬영상 Empty sella가 진단되어 이를 bromocriptine으로 치료한 후, 유방 섭취의 소실이 확인 되어 I-131 치료를 시행한 경우가 있어 이를 보고 하고자 한다.

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