Synchronous parathyroid adenoma and papillary thyroid cancer detected on ^{99m}Tc-sestamibi scintigraphy

Sir,

Medullary thyroid cancer and concomitant primary hyperparathyroidism is common in multiple endocrine neoplasia-2A.[1] Similar origin of both cell types could be one of the explanations. However, concomitant nonmedullary thyroid cancer and Primary Hyperparathyroidism (PHP) is rare.[2] According to some, this is just a coincidental finding and some authors relate this to radiation exposure in childhood or adolescence, increased calcium, epithelial growth factors and insulin-like growth factor. Moreover, this association has been studied mostly based on operative findings and postoperative histopathology reports. Few case reports and interesting images have shown evidence of concomitant papillary thyroid cancer and PHP on radionuclide scintigraphy, not much is explained in the literature about this rare association on preoperative evaluation.[3-6]

Definite treatment for parathyroid adenoma is surgical removal. Hence, the accurate preoperative localization of adenoma is utmost important. This has a proven advantage in not only reducing the intraoperative time for exploration but also increasing the operative success rate and ultimately preventing unnecessary intraoperative intervention. Over many years, various functional and anatomical and functional imaging modalities have been evolved for preoperative localization of parathyroid adenoma. With advances in newer modalities, especially like Tc-99m-sestamibi single-photon emission computed tomography (SPECT/CT), 4DCT, and F-18 fluorocholine positron emission tomography/CT, spatial resolution and subsequently detection smaller parathyroid adenoma along with detection of incidental findings has improved significantly.

In the present case, ^{99m}Tc-sestaMIBI SPECT/CT [Figures 1a, b and 2a-f] demonstrated left inferior

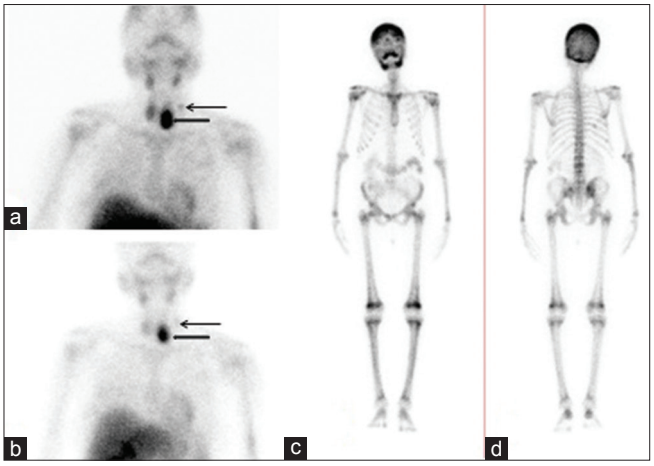

Figure 1: (a) Tc-99m-sestamibi planar images of neck and chest at 15 min showed diffuse uptake in thyroid, focal increased uptake in the region of left lobe of thyroid (thick arrow) and faint uptake in the left lower cervical region lateral to the thyroid (thin arrow), (b) there was washout of uptake from thyroid and persistent intense uptake inferior to left lobe of thyroid at 50 min. (c and d) Tc-99m-methylene diphosphonate bone scan anterior and posterior views showing increased bone to soft tissue ratio with increased tracer uptake in calvaria, bared sign, and nonvisualization of kidneys consistent with superscan

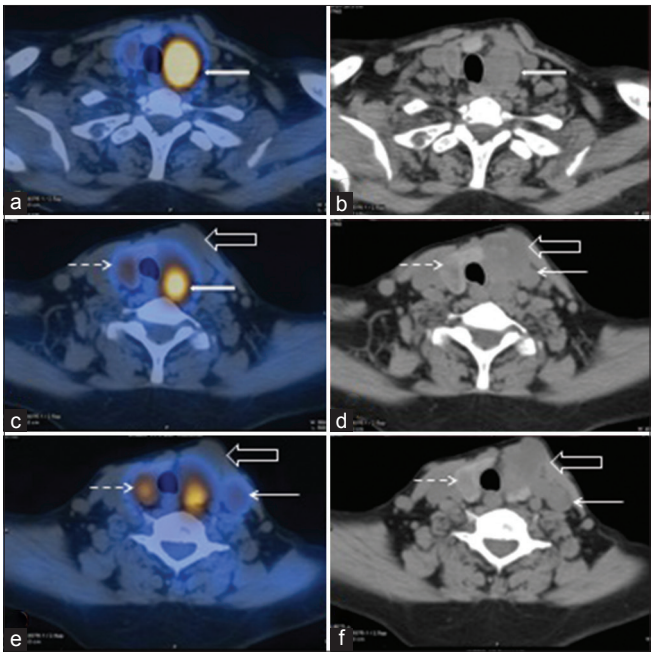

Figure 2: (a-f) Transaxial single-photon emission computed tomography Tc-99m-sestamibi images showed soft tissue density lesion just below the left lobe of thyroid with intense radiotracer uptake (thick arrow), irregular mass in the left lobe of thyroid (outlined arrow) with no tracer radiotracer uptake, hypodense lesion with mild uptake in the right lobe of thyroid (dotted arrow) and rounded left level IV cervical lymph nodes with mild tracer uptake (thin arrow)

parathyroid adenoma with another mass lesion in the left lobe of thyroid, a hypodense lesion in the right lobe of thyroid and left level IV cervical lymph nodes with mild tracer uptake. With these findings, possibilities of parathyroid adenoma and concurrent thyroid carcinoma with cervical lymph nodal metastasis or metastatic parathyroid carcinoma with concurrent thyroid nodule were raised. To assess bony involvement by hyperparathyroidism, the patient also underwent Tc-99m-methylene diphosphonate bone scan [Figure 1c and d]. It demonstrated features of metabolic superscan. Fine needle aspiration cytology from left cervical lymph node revealed papillary carcinoma of the thyroid. Further, patient underwent a complex surgery of removal of parathyroid adenoma along with total thyroidectomy and left neck dissection. Final histopathology revealed parathyroid adenoma, synchronous left lobe papillary thyroid carcinoma with ipsilateral cervical lymph node metastasis; however, right lobe of thyroid did not demonstrate any malignant features.

Thus, this letter emphasizes the usefulness of Tc-99m-sestamibi scintigraphy in the evaluation of concomitant thyroid pathologies in a patient with parathyroid adenoma and also illustrates the importance of incidental findings in thyroid and neck which otherwise could be overlooked.

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Conflicts of interest
There are no conflicts of interest.

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