



A Rare Case of Ectopic Thyroid from a Nasopharyngeal Carcinoma Patient Diagnosing with ¹⁸F-FDG PET/CT

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Abstract

Ectopic thyroid is an abnormal thyroid gland embryogenesis; the thyroid is not in the normal position of the neck but appears in other parts. About 90% of the ectopic thyroid is located at the base of the tongue. This case showed a mass in the right supraclavicular region, which initially diagnosed as metastatic Lymph Node (LN) on CT and MRI in a nasopharyngeal carcinoma patient. While, this mass had no FDG uptake through ¹⁸F-FDG PET/CT imaging, and it was finally confirmed as ectopic thyroid tissue pathologically using needle biopsy. We emphasize the important role of ¹⁸F-FDG PET/CT for confirming and excluding lymph node metastasis.

Keywords: Ectopic thyroid; ¹⁸F-FDG PET/CT; Lymph node metastasis; Nasopharyngeal carcinoma

Introduction

Ectopic thyroid is an abnormal thyroid gland embryogenesis, the thyroid is not in the normal position of the neck but appears in other parts, such as the tongue, submandibular, the pharynx, the anterior larynx, trachea, esophagus, the back of the sternum and the chest cavity et al [1-5]. Ninety percent of the ectopic thyroid is located at the base of the tongue, whereas lateral thyroid gland is very rare [6]. Here, we report a patient with nasopharyngeal carcinoma, who had a mass in the right supraclavicular region. The mass had no FDG uptake using ¹⁸F-Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography (¹⁸F-FDG PET/CT) imaging, which was finally found to be ectopic thyroid tissue through needle aspiration biopsy.

Case Presentation

A 69-year-old man who first came to our attention for the neck mass. Both Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) showed a mass in the nasopharynx (blue arrow) (Figures 1A-1E), and two masses in the right neck, of which one was in the upper neck (red arrow) (Figures 1F-1J), the other was in the supraclavicular region (yellow arrow) (Figures 1K-1O). Enhanced CT showed the masses had significant heterogeneous enhanced (Figures 1B, 1G, 1L). Enhanced T1-weighted MRI also showed hyper intensity with significant heterogeneous enhancement (Figures 1D, 1I, 1N). Neck Ultrasound showed a heterogeneous mass about 33 mm in size (orange arrow) (Figure 1P) with peripheral sparse blood flow signals (white arrow) (Figure 1Q) in the supraclavicular region. The mass in the nasopharynx was confirmed as non-keratinized undifferentiated carcinoma at histological analysis (R). This patient was clearly diagnosed as Nasopharyngeal Carcinoma (NPC).

It is important to mention that the mass in the supraclavicular region have the characteristics of metastatic Lymph Nodes (LNs) based on anatomical imaging (CT and MRI), while it was not confirmed as metastase by ultrasonography. In order to further determine whether this lymph node is metastatic, so as to confirm the tumor clinical staging, we performed ¹⁸F-FDG PET/CT imaging for this NPC patient. Higher ¹⁸F-FDG accumulation was shown in the nasopharyngeal lesion (blue arrow) (Figures 2A-2C) and the right upper neck mass (red arrow) (Figures 2D-2F). While, the mass in the right supraclavicular region had no uptake of ¹⁸F-FDG (yellow arrow) (Figures 2H-2J). The coronal maximum intensity image of these masses was shown in Figure 2G. Finally, CT-guided mass biopsy was performed to determine the nature of the mass in the supraclavicular region and pathological diagnosis confirmed the mass was differentiated thyroid tissue (Figure 2K). The thyroid gland itself could be visualized at its normal anatomical site in this patient. And the patient was asymptomatic with normal thyroid hormone levels.

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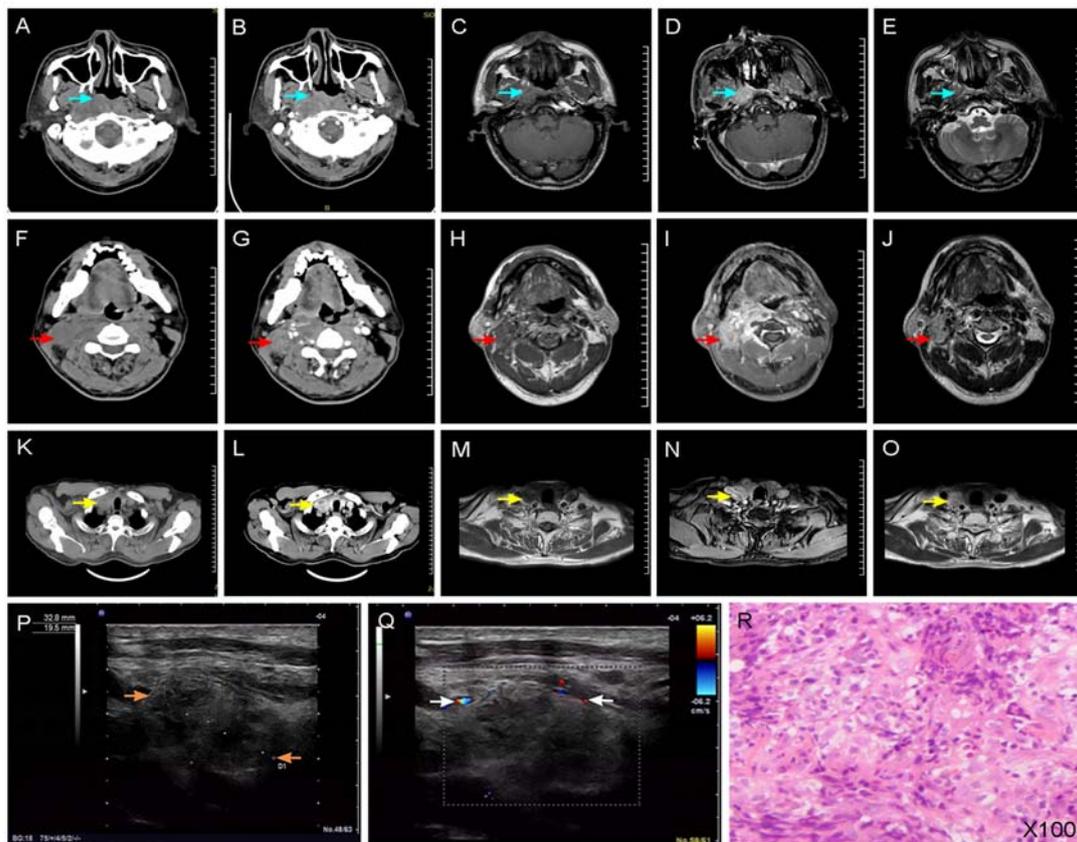


Figure 1: Rows 1 to 3, from left to right were plain CT, enhanced CT, plain T1-weighted MRI (T1WI), enhanced T1WI, T2WI, respectively. The blue arrow (A-E) showed a mass in the nasopharynx, the red arrow (F-G) showed a mass in the right upper neck, the yellow arrow (K-O) showed a mass in the right supraclavicular region. Neck Ultrasound showed a heterogeneous mass about 33 mm in size (P, orange arrow) with peripheral sparse blood flow signals (Q, white arrow) in the supraclavicular region. Histopathological analysis showed as non-keratinized undifferentiated carcinoma (R).

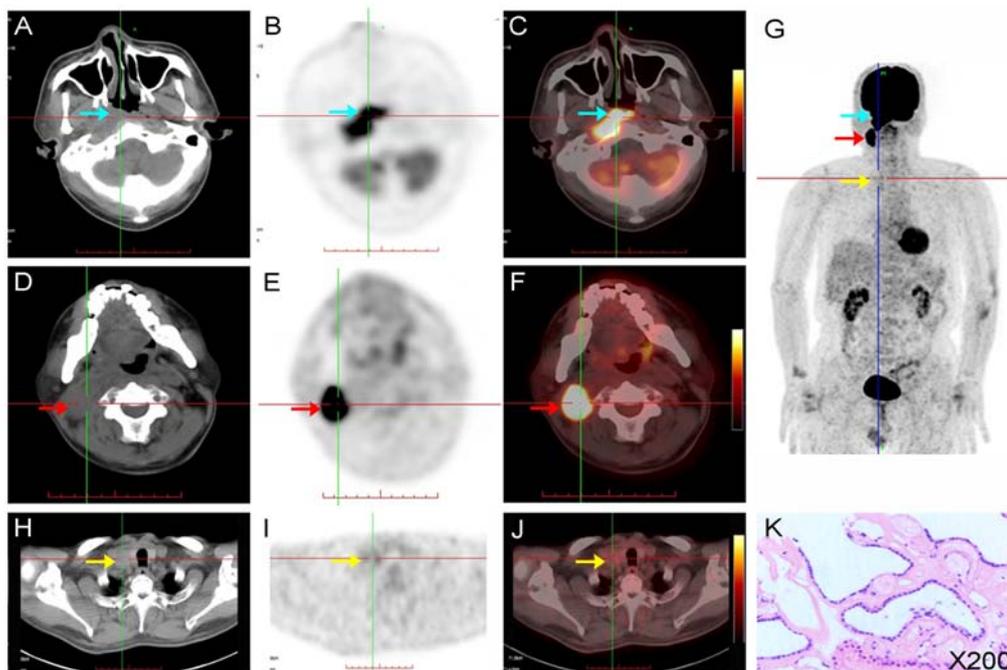


Figure 2: From left to right were plain CT, PET, PET and CT fused image. The blue arrow showed higher ¹⁸F-FDG accumulation in the nasopharyngeal lesion (A-C). The red arrow showed higher ¹⁸F-FDG accumulation in the right upper neck (D-F). The yellow arrow showed no uptake of ¹⁸F-FDG (H-J) in the right supraclavicular region. Figure G showed the coronal maximum intensity image. Pathological diagnosis confirmed as differentiated thyroid tissue (K).

Discussion

¹⁸F-FDG PET/CT plays a great role in diagnosing metastatic LNs, especially for LNs with the maximum diameter less than 10 mm, which do not reach the radiologic diagnostic criteria for metastasis in Nasopharyngeal Carcinoma (NPC) [7]. One study reported the diagnostic sensitivity, specificity, accuracy, positive and negative predictive values of ¹⁸F-FDG PET/CT for cervical metastatic LNs of NPC were 94.1%, 85.0%, 89.2%, 84.2% and 94.4%, respectively [8]. In the present study, we used ¹⁸F-FDG PET/CT to show no FDG accumulation in the supraclavicular mass, which eventually proved to be an ectopic thyroid but not metastasis, thereby avoiding excessive irradiation of the lower neck LNs region. In the study of Park SH et al. [9] they also used ¹⁸F-FDG PET/CT to show a relatively low ¹⁸F-FDG avidity lesion in the mediastinum, which pathologically diagnosed as ectopic thyroid.

The ectopic thyroid is abnormality caused by aberrant thyroid gland embryogenesis. The mechanisms responsible for the development of ectopic thyroid tissue are based on thyroid embryology, which include metastases, abnormal migration, and hetero topic differentiation of endodermal cells [10]. The patient had bilateral partial thyroidectomy for bilateral thyroid adenoma 11 years ago. The reason of thyroid ectopic may be that thyroid tissues were divided by the shearing force of muscle movement during surgery, and then gradually migrated to other places, and finally form the ectopic thyroid.

Conclusion

We report the rare case of ectopic thyroid incidentally detected for a patient with NPC. We emphasize the important role of ¹⁸F-FDG PET/CT in confirming and excluding lymph node metastasis.

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References

1. Abdelhafez Y, Khalil M, Roshdy E, Diab WA, Eltoni L. Hybrid SPECT/CT helps characterization and localization of a dual thyroid ectopia. *Clin Nucl Med.* 2017;42(11):855-6.
2. Prasad K, Anuradha KB. Ectopic lingual thyroid presenting with nasal twang and hemoptysis. *Malays J Med Sci.* 2015;22(2):73-5.
3. Yilmaz MS, Ayturk S, Guven M, Dilek FH. Submandibular ectopic thyroid with normally located thyroid gland. *Kulak Burun Bogaz Ihtis Derg.* 2014;24(1):50-3.
4. Wang J, Fang J. Ectopic thyroid mass in the left lateral neck and anterior mediastinum: A case report. *J Med Case Rep.* 2014;8:351.
5. Maki AC, Foster MB, Bond SJ. Lateral pediatric ectopic thyroid. *Laryngoscope.* 2013;123(2):524-7.
6. Paragliola RM, Papi G, Lovicu RM, Pontecorvi A, Corsello SM. A rare case of lateral ectopic thyroid. *Clin Nucl Med.* 2016;41(12):936-7.
7. Peng H, Chen L, Tang LL, Fei Li W, Ping Mao Y, Guo R, et al. Significant value of (18)F-FDG-PET/CT in diagnosing small cervical lymph node metastases in patients with nasopharyngeal carcinoma treated with intensity-modulated radiotherapy. *Chin J Cancer.* 2017;36(1):95.
8. Shen G, Xiao W, Han F, Fan W, Ping Lin X, Lu L, et al. Advantage of PET/CT in target delineation of MRI-negative cervical lymph nodes in intensity-modulated radiation therapy planning for nasopharyngeal carcinoma. *J Cancer.* 2017;8(19):4117-23.
9. Park SH, Seo M, Park TY, Nam-Goong S. An intrapericardial ectopic thyroid mimicking metastasis in a patient with papillary thyroid cancer: Localization, differential diagnosis by (18)F-FDG PET/CT and ablation by ¹³¹I. *Hell J Nucl Med.* 2016;19(3):272-4.
10. Tamaki S, Miyakura Y, Someya S, Ishikawa H, Kakizawa N, Hasegawa F, et al. Laparoscopic resection of retroperitoneal ectopic thyroid tissue. *Asian J Endosc Surg.* 2017;10(3):331-3.