

## <sup>99m</sup>Tc-pertechnetate thyroid static scintigraphy unexpectedly revealed ectopic gastric mucosa of upper esophagus

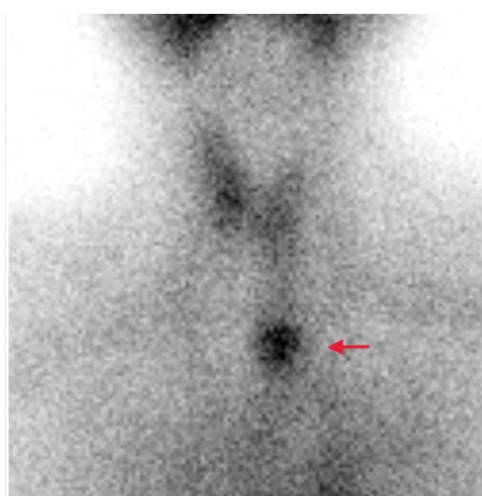
### Abstract

Technetium-99m (<sup>99m</sup>Tc)-pertechnetate can be taken up by both gastric mucosa and thyroid tissue. Ectopic gastric mucosa of upper esophagus found in thyroid scintigraphy is rare. We reported a 31-year-old woman who underwent <sup>99m</sup>Tc-pertechnetate thyroid static scintigraphy for abnormal ultrasound findings. A focal uptake lesion was found in her upper chest. Single photon emission computed tomography/computed tomography (SPECT/CT) imaging showed increased uptake in multiple sites of the upper esophagus without significant thickening. Eventually, gastroscopic findings revealed multiple ectopic gastric mucosa of upper esophagus.

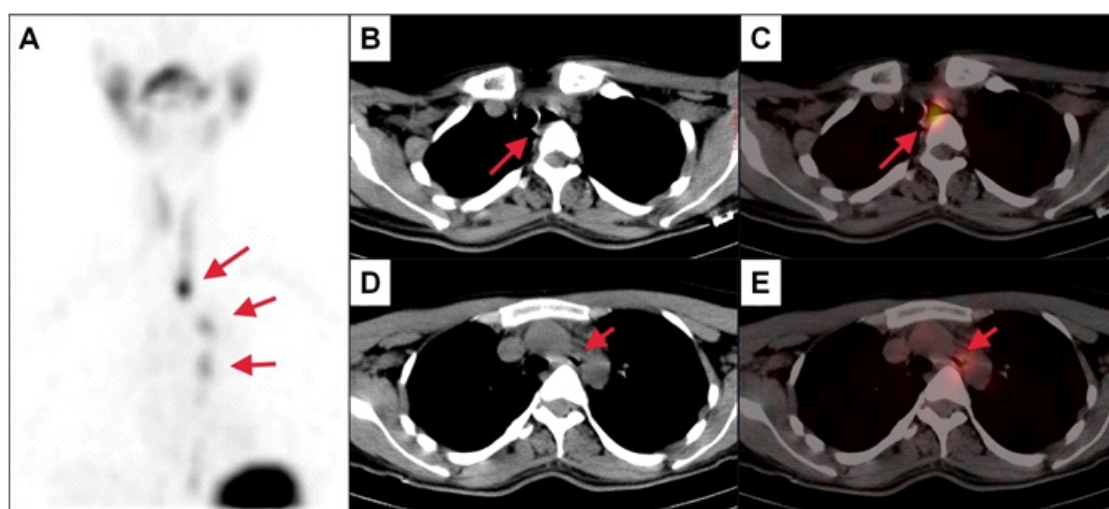
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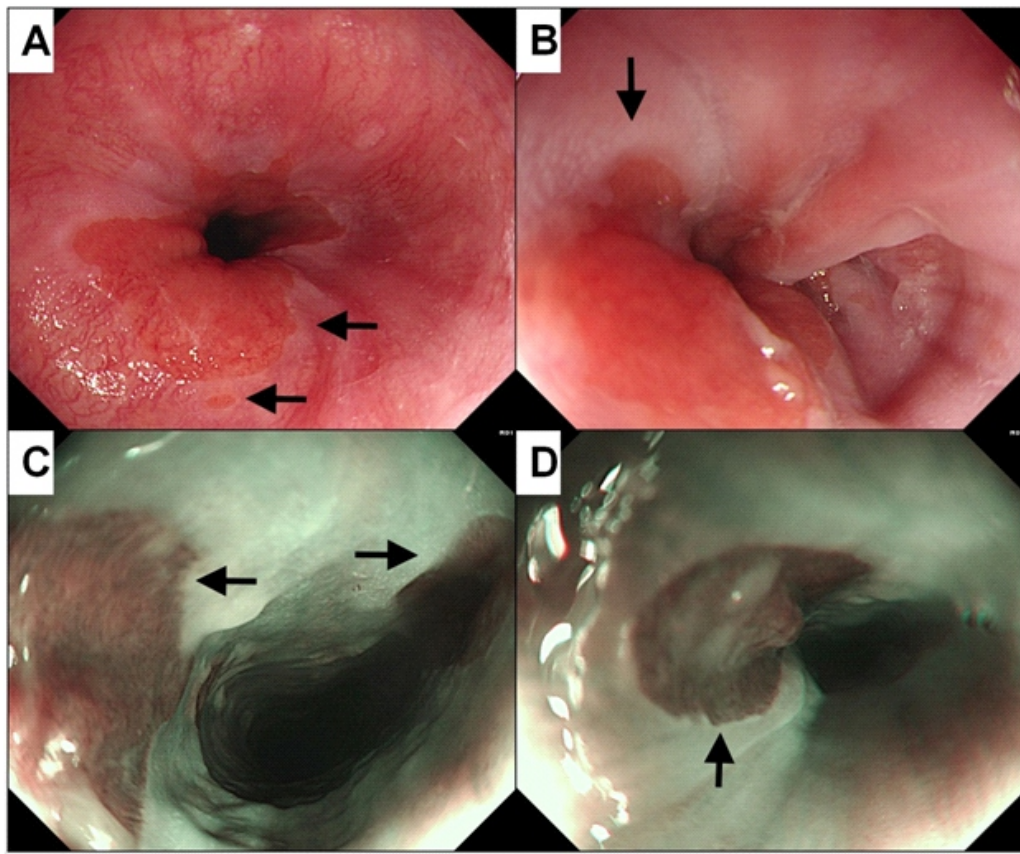
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**Figure 1.** A 31-year-old woman was admitted to our hospital for <sup>99m</sup>Tc-pertechnetate thyroid static scintigraphy because of hypoechoic area in both thyroid lobes on ultrasound during a routine medical checkup. Planar images 30min after intravenous administration of 185MBq (5mCi) of <sup>99m</sup>Tc-pertechnetate demonstrated decreased uptake in the left thyroid lobe. Additionally, there was a focal uptake in her upper chest (red arrow). We initially suspected ectopic thyroid and suggested SPECT/CT fusion imaging for accurate localization.



**Figure 2.** The results of SPECT/CT fusion imaging were unexpected. The study revealed multiple sites of increased uptake situated at esophagus (maximum intensity projection (MIP); A, arrows). Among them, the highest uptake site was located in the upper esophagus which corresponds to the second thoracic vertebra. On SPECT/CT images, the esophagus was stiff without significant thickening and the trachea was biased to the right of the mediastinum (B and C, arrows). The remaining esophagus with a slight up-take showed no abnormality on CT (D and E, arrow). On re-examination, we learned that she occasionally had a mild belching. Therefore, we considered ectopic gastric mucosa of upper esophagus. To confirm our speculation, we recommended that she undergo a gastroscopy.



**Figure 3.** Gastroscopy showed multiple pieces of orange red mucosa at 16-23cm from the upper incisors (high-definition white light endoscopy; A and B, arrows) and the lesions manifested as glandular structures of variable size (narrow-band imaging; C and D, arrows). The rest of the esophageal mucosa had a smooth surface without neoplasm and varicose veins. Therefore, ectopic gastric mucosa of upper esophagus was diagnosed. Ectopic gastric mucosa refers to the discovery of normal gastric tissue at foreign sites. It has been described anywhere in alimentary tract, especially Barrett esophagus, Meckel diverticulum and intestinal duplication malformations [1]. Ectopic gastric mucosa of upper esophagus is found in 10% of the population with endoscopy [2]. Most are clinically asymptomatic, only 10% of population have clinical symptoms such as chest and throat pain, dysphagia, globus sensation, shortness of breath, chronic cough, and hoarseness [3]. Technetium-99m-pertechnetate can normally be taken up by gastric mucosal tissues [4]. This examination has a high diagnostic value, especially in the small intestine, which is difficult to find by endoscopy [1, 5]. The ectopic gastric mucosa of upper esophagus could also take up the  $^{99m}\text{Tc}$ -pertechnetate. However, normal radiopharmaceutical accumulation in thyroid could affect the imaging and lead to false negative results [6]. Conventional ectopic gastric mucosa scintigraphy covers the abdominal area and rarely the upper chest or cervical. In cervical  $^{99m}\text{Tc}$ -pertechnetate imaging, the uptake outside the thyroid is often considered to be ectopic thyroid empirically [7]. Single photon emission tomography/CT has higher diagnostic value than planar imaging because it can accurately locate and provide certain CT information. In our case, multiple lesions of esophagus without significant thickness were detected on SPECT/CT. Although rare cases of ectopic thyroid in the esophagus have been reported, they were all solitary lesions with marked thickness or mass [8-10]. Since in our case there was no thickening, we considered ectopic gastric mucosa which was confirmed by endoscopy.

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