초음파에서 악성으로 오인된 복합 갑상설관낭종: 증례 보고

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J Korean Soc Ultrasound Med
2012;31:31-34
Received June 13, 2011; Revised August 11, 2011; Accepted October 19, 2011.

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Complicated Thyroglossal Duct Cyst Mimicking Malignancy on Ultrasound: A Case Report

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A Thyroglossal Duct Cyst (TGDC) is the most common cause of midline neck masses and is characterized in sonography as an anechoic or hypoechoic well-circumscribed cyst with posterior enhancement. TGDCs mostly occur in children and are easy to spot in them, but the sonographic appearance of TGDCs in adults is variable, ranging from a typical anechoic to a pseudosolid appearance. The presence of a solid component should alert the radiologist to the possibility of a cancer arising from the thyroglossal duct. We report here on our experience with a 58-year-old woman who had a complicated TGDC with a suspicious sonographic appearance of malignancy.

Key words : Ultrasonography; Thyroglossal duct cyst; Complicated cyst

Introduction

If the thyroglossal duct does not atrophy completely, the remnant can manifest clinically as a thyroglossal duct cyst (TGDC). TGDCs account for approximately 70% of congenital abnormalities in the neck [1]. Eighty-five percent of TGDCs are located below the level of the hyoid bone and generally present as midline cystic masses. These lesions may also be located anywhere from the thyroid cartilage up to the base of the tongue, usually in a midline or slightly off-midline location [2]. TGDCs occur mostly in children less than 10 years old, but its appearance can be seen throughout life [3].

The typical ultrasonographic (US) appearance has been described as an anechoic or hypoechoic well-circumscribed cyst with increased through-transmission deep to or embedded in the thyrohyoid strap muscle [2]. Also, functional thyroid tissue has been described within the TGDC that may constitute a primary thyroid carcinoma [4]. The presence of a solid component should alert the radiologist to the possibility of malignancy originating from the TGDC.

Here, we present a case of a complicated TGDC that showed possible malignancy in its US appearance.

Case Report

A 58-year-old woman was referred to the radiology department for US examination of her enlarged thyroid glands. On US examination, both thyroid glands showed enlargement and heterogeneous echogenicity without a focal lesion. There was also an

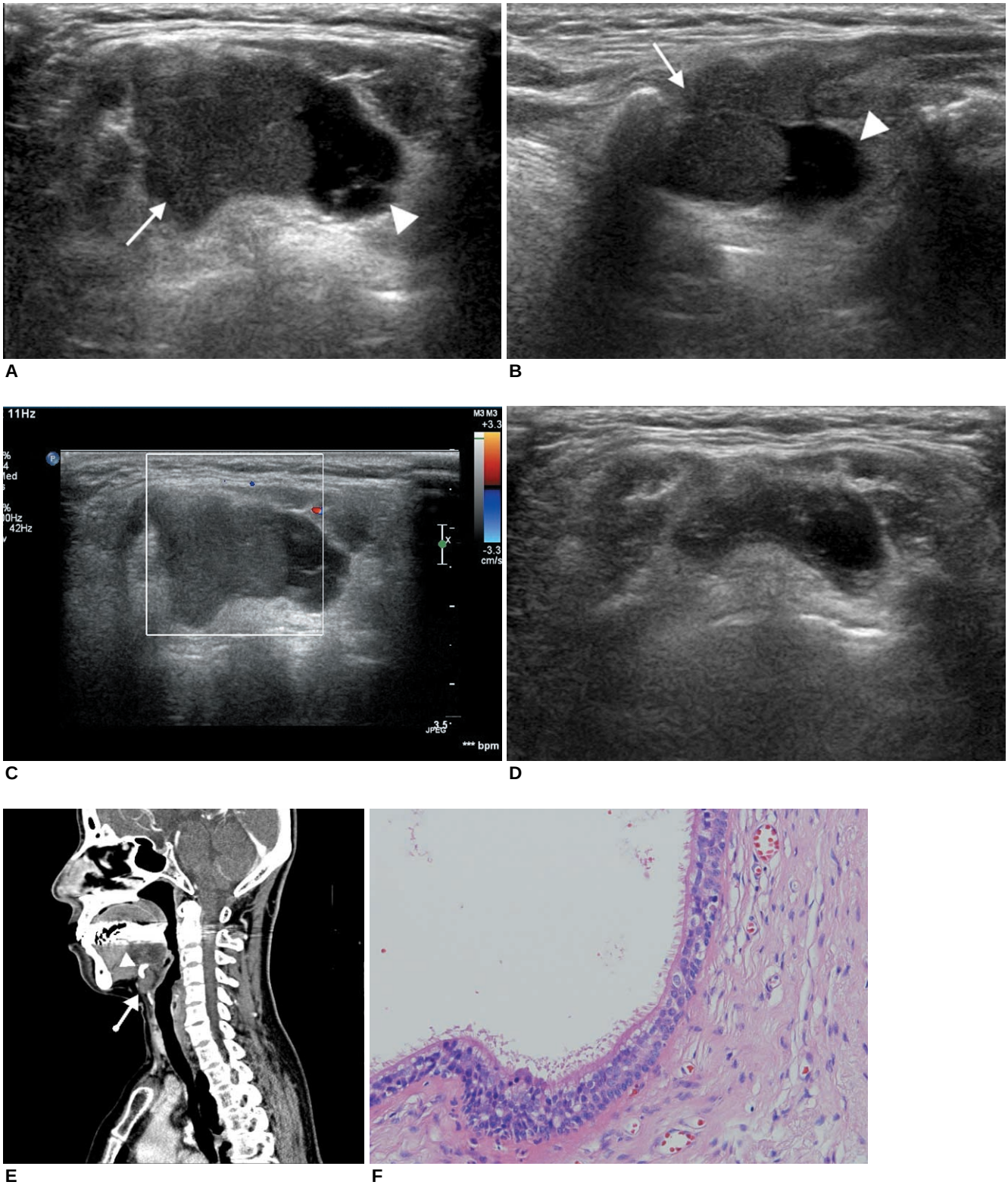

Fig. 1. A 58-year-old woman with an incidentally-found submental mass.
Transverse (**A**) and longitudinal (**B**) ultrasonography show a lobulated mixed echoic mass in submental space. The mass shows two components of the mass, a hypoechoic solid mass-like portion (arrows) and a septated cystic portion (arrowheads). (**C**) On color Doppler ultrasonography, the solid portion of the mass does not show definite vascularity. (**D**) Transverse ultrasonography after ultrasonography-guided fine needle aspiration showing the nearly-collapsed mass. A contrast-enhanced computed tomographic scan of the neck with sagittal reconstruction (**E**) reveals a midline nonenhancing mass (arrow) abutting the hyoid bone (arrowhead) in the pre-epiglottic space. A histological section of the thyroglossal duct cyst (**F**) shows a cystic structure lined by respiratory epithelium (H & E, ×200).

incidentally-found lobulated mixed echoic mass in her submental space, measuring approximately 2.6×1.7 cm (Fig. 1A). The mass was divided into two main portions, a hypoechoic solid mass-like portion and a septated cystic portion (Fig. 1B). On color doppler US, the solid portion of the mass did not move on position change and did not show definite vascularity (Fig. 1C). US findings were suggestive of malignancy and an ultrasound-guided fine need aspiration (US-FNA) was performed, targeting the solid portion of the mass. About 1.5 ml of a yellowish pus-like material was aspirated. Another US-FNA was performed on the cystic portion of the mass, and a small amount of viscous fluid was aspirated. After the US-FNA, the mass was almost completely collapsed (Fig. 1D). An axial contrast-enhanced CT scan of the neck revealed an approximately 2-cm non-enhancing lesion abutting the hyoid bone in the pre-epiglottic space (Fig. 1E). Finally, the patient underwent a Sistrunk operation and the final pathologic diagnosis was TGDC (Fig. 1F).

Discussion

The most common congenital anomaly related to the thyroglossal duct is the TGDC. It is thought to represent segments of the duct that fail to regress and consequently differentiate into epithelial-lined cysts. TGDCs develop anywhere along the course of the duct remnant, from the base of the tongue to the suprasternal region [2]. The most common clinical presentation of a TGDC is a gradually-enlarging painless mass at the anterior neck [5].

Although a TGDC is generally easily treated with surgical therapy, accurate preoperative diagnosis is essential to prevent recurrence and to ensure optimal cosmetic outcomes. The diagnostic procedure can usually be initiated by performing imaging studies, because many types of the neck masses cannot be differentiated simply by clinical examination. The role of imaging is to confirm the clinical diagnosis and identify the presence of the thyroid gland. Approximately 1.5% of patients with a preoperative thyroglossal duct cyst diagnosis are found to have a median ectopic thyroid at the time of surgery. In these patients, the only functional thyroid tissue is located within the mass [6]. It can also provide preoperative information regarding the presence or absence of a solid component within the cyst. Although the role of CT and MR imaging is well-documented [3], high-resolution US remains the ideal initial investigation because it is easily available, inexpensive, and provides the surgeon with necessary preoperative information. Preoperative US examination is important to confirm whether or not a TGDC is accompanied by any unexpected complications such as a solid component or fistula. If a solid component within a TGDC is recognized during US, ectopic thyroid tissue or a thyroglossal duct carcinoma should be considered. The incidence of ectopic thyroid tissue within the cyst wall has ranged from 0.5% to 5.7% [7]. A thyroglossal duct carcinoma, usually a papillary adenocarcinoma, is an uncommon complication of TGDC, occurring in less than 1% of cases [4]. The previous study by Allard reported that 32.6% of overall cases presented with fistulae in a series of 1534 TGDC cases [6].

The typical US appearance of a TGDC has been that of an anechoic, well-circumscribed cyst with increased through-transmission [8]. However, earlier studies in children and adults have shown that most are not simple cysts but instead are either homogeneous pseudosolid or heterogeneous complex hypoechoic lesions. Many variations of its sonographic features have been reported [2]. Previous authors have suggested that the echogenicity within the TGDC is due to either inflammation or hemorrhage [8]. However, the echogenic appearance was considered to be due to the proteinaceous content of the fluid secreted by the epithelial lining of the cyst wall, rather than inflammation [2]. Posterior enhancement is one of the characteristic features of TGDCs in either anechoic or hypoechoic lesions. However, in the lesions that had a pseudosolid or heterogeneous appearance, the posterior enhancement was sometimes absent or subtle, but it was the key to identifying the cystic rather than the solid nature of

the nodule [9]. Although a minority of the TGDCs had a thick wall and internal septa, these features were considered to correlate with the presence of inflammation [9].

In this case, the mass was composed of a hypoechoic solid mass-like portion and a septated cystic portion. The solid portion of the mass did not move on position change and did not show definite vascularity. On suspicion of malignancy, a US-FNA was performed on the solid portion of the mass, which finally revealed it was complicated TGDC. A thyroglossal duct carcinoma may be clinically indistinguishable from a benign thyroglossal duct cyst, and the diagnosis is frequently made postoperatively by histopathological examination of the resected tissues [10]. However, malignancy should be suspected if the cyst is hard, fixed, irregular, or displays sudden expansion with palpable neck lymph nodes [10]. The use of US-FNA in this situation has recently become more common, and may enhance a preoperative diagnosis [11, 12].

The sonographic appearance of TGDCs in adults is variable. To make a correct preoperative assessment, the radiologist must be familiar with these characteristics. TGDCs in adults do not seem to be simple cysts, as previously suggested, but instead have a complex cystic pattern ranging from an anechoic to a pseudosolid appearance. If TGDCs show a solid component within the cyst during US, the radiologist shoud closely examine the cyst with additional modalities, including color doppler US, contrast-enhanced CT, and, subsequently, US-guided fine needle aspiration. The radiologist should consider the possibility of thyroid cancer arising from ectopic thyroid tissue or a thyroglossal duct carcinoma. This case report presents a complicated cyst originating from TGDC, which shows suspicious US findings for malignancy.

요 약

갑상설관낭종은 경부 정중앙에서 관찰되는 가장 흔한 종괴의 원인으로서 주로 소아에서 관찰되며 초음파상 특징적인 무에코나 저에코의 경계가 좋은 후방 에코증강을 가진 낭종으로 관찰된다. 하지만 성인의 갑상설관낭종은 전형적인 무에코부터 가성고형 양상의 다양한 초음파 소견을 보인다. 그리고 고형 부분이 관찰되면 갑상설관암의 가능성을 염두에 두어야 한다. 이에 저자들은 58세 여자에서 초음파상 악성이 의심되었던 갑상설관낭종에서 발생한 복합낭종의 증례를 경험하여 보고한다.

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