

Killian-Jamieson Diverticula Mimicking Thyroid Nodule on Ultrasound: Radiographic Findings in Two Patients ¹

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Killian-Jamieson diverticula are lateral diverticula in the cervical esophagus. Because of their location, they have been found incidentally during ultrasound (US) and they've sometimes been mistakenly identified for thyroid nodules. We describe here the US findings, the fine needle aspiration (FNA) procedure and the esophagography of a Killian-Jamieson diverticulum in a 70-year-old man. This diverticulum was considered to be a calcified thyroid nodule until we performed FNA. We will discuss the sonographic findings that are helpful for differentiating Killian-Jamieson diverticula from thyroid nodules. In addition, we describe the US findings of a small Killian-Jamieson diverticulum in a 34-year-old woman.

Index words : Esophagus
Diverticula esophagus
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The lateral diverticula of the cervical esophagus are called "Killian-Jamieson diverticula." They originate below the transverse portion of the cricopharyngeal muscle at the transition between the pharynx and esophagus, and this position probably represents a site of lower resistance (1). Because they will cause fewer symptoms than Zenker's diverticula, they are often found incidentally on esophagography (2). They can also be detected by neck ultrasound (US), which is popularly used for examining the thyroid gland. We describe here two cases of Killian-Jamieson diverticula. In the first case, the diverticulum was tentatively identified as a calcified thyroid nodule when it was evaluated by US and, as a consequence, a fine needle aspiration (FNA) procedure was attempted. The aspiration procedure and the subse-

quently performed esophagography revealed a Killian-Jamieson diverticulum. The second case was a small-sized Killian-Jamieson diverticulum that was correctly diagnosed by meticulously performed US.

The purpose of this report is to describe the sonographic findings of Killian-Jamieson diverticula and to help radiologists avoid unnecessary invasive procedures for such extrathyroidal lesions.

Case Report

Case 1

A 70-year-old man presented with a calcified thyroid nodule that was detected incidentally at an outside hospital. The physical examination of the patient and the laboratory tests were normal.

US was performed using a real-time linear array unit with a 7.5 - 12 MHz transducer (HDI 5000 SonoCT; Philips Medical Systems, Bothell, WA) with the patient in the supine position and the neck hyperextended. US revealed an approximately 2.5 cm, well-defined, multi-

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layered, hypoechoic lesion with an anteriorly located, continuous echogenic line and there were floating echogenic foci in the posterior portion of the left thyroid lobe (Fig. 1A, B). The remaining tissue of the left thyroid was slightly smaller than that of the right thyroid lobe (Fig. 1B). To obtain a pathological diagnosis, FNA was attempted using a 23-gauge needle. During insertion of the needle, the calcified wall was easily pushed back by the needle and some air was aspirated after the needle had been inserted. After that, the inserted needle was promptly removed and US was performed more carefully to find the connection between the suspected thyroid nodule and the cervical esophagus. There was no definite connection demonstrated by US. Esophagography was performed to confirm the diagnosis. This procedure revealed a 2.5 cm diverticulum with a narrow neck on

the anterolateral wall of the lower cervical esophagus (Fig. 1C, D).

A diagnosis of Killian-Jamieson diverticulum was made according to these radiologic findings. Because the patient didn't complain about any problems related to the diverticulum, he was discharged without treatment.

Case 2

Four months after the visit of the first patient, a 34-year-old woman presented with an incidentally detected thyroid nodule. The physical examination of the patient and the laboratory tests were normal.

US was performed using a real-time linear array unit with a 7.5 - 12 MHz transducer (iu22; Philips Medical Systems, Bothell, WA) with the patient in the same position as case 1. US revealed a 0.6 cm, well-defined, multi-

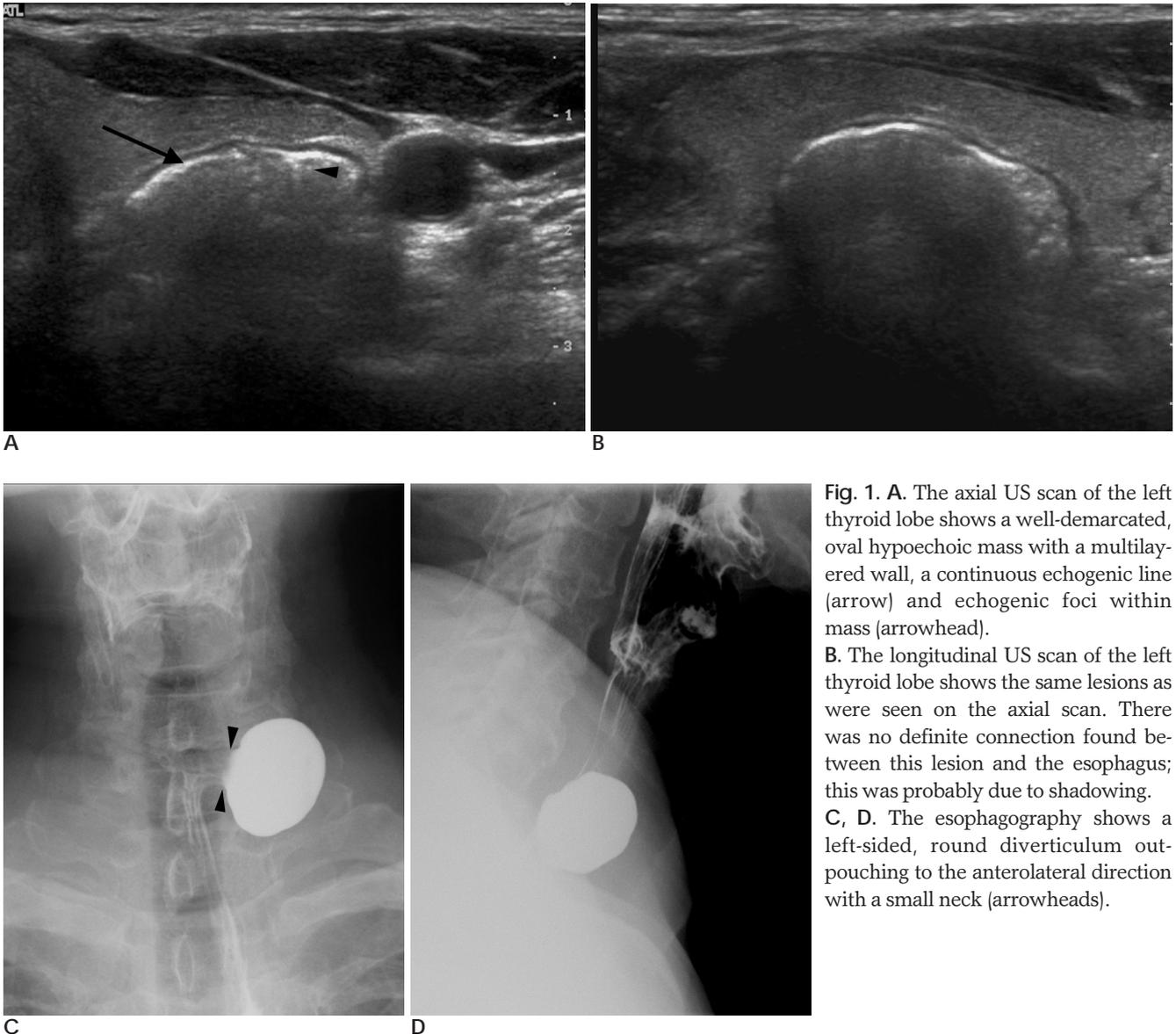


Fig. 1. A. The axial US scan of the left thyroid lobe shows a well-demarcated, oval hypoechoic mass with a multilayered wall, a continuous echogenic line (arrow) and echogenic foci within mass (arrowhead). **B.** The longitudinal US scan of the left thyroid lobe shows the same lesions as were seen on the axial scan. There was no definite connection found between this lesion and the esophagus; this was probably due to shadowing. **C, D.** The esophagography shows a left-sided, round diverticulum out-pouching to the anterolateral direction with a small neck (arrowheads).

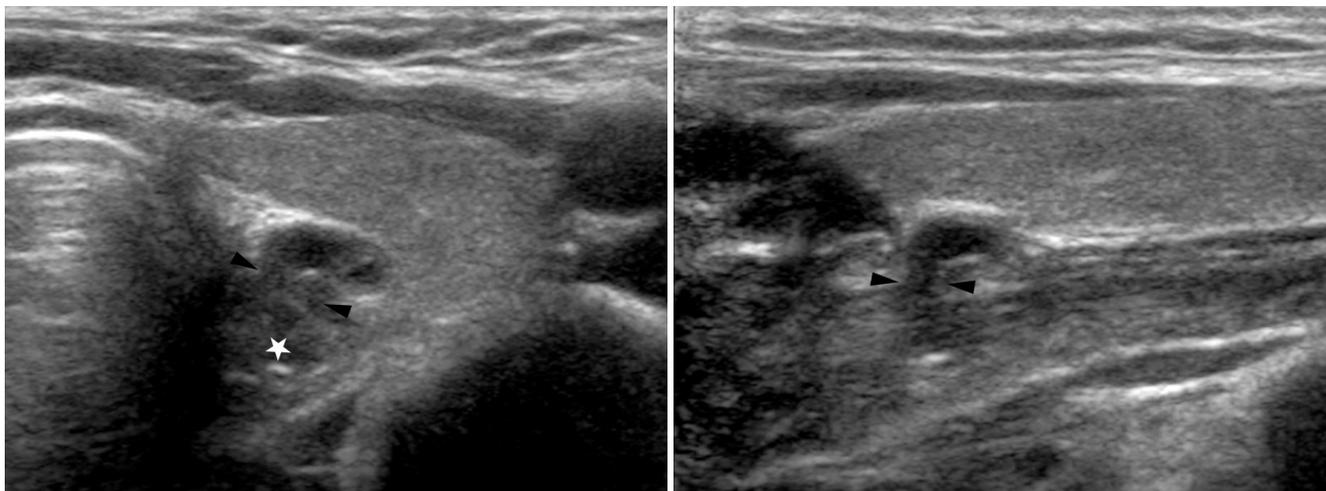


Fig. 2. A, B. The US scan obtained in the second patient. The axial scan (A) and longitudinal scan (B) revealed a small, markedly low, echoic lesion with some echogenic foci, and there was a connection (arrowheads) between this lesion and the esophagus

layered hypoechoic lesion with some echogenic foci in the posterior portion of the left thyroid lobe (Fig. 2A, B). The remaining tissue of the left thyroid was similar to that of the right thyroid lobe. In this case, US examination revealed a connection between the suspected thyroid nodule and the cervical esophagus. During the swallowing of saliva, the contents within the lesion were moved to and fro along the connection. Further examinations such as FNA and esophagography were not performed. Because this patient also had no symptoms related to the cervical diverticulum, no treatment was applied.

Discussion

Zenker's diverticulum originates on the posterior wall of the pharyngoesophageal segment, in a midline area of weakness just above the cricopharyngeus, whereas Killian-Jamieson diverticulum originates on the anterolateral wall of the proximal cervical esophagus in a gap just below the cricopharyngeus and lateral to the longitudinal tendon of the esophagus. The differential diagnosis is generally made radiographically via a barium study, which shows the sac of the Zenker's diverticulum lying posterior to the cervical esophagus on the lateral images and in the midline on the frontal images. In contrast, the sacs of the Killian-Jamieson diverticula in a previously reported series were seen overlapping the anterior wall of the cervical esophagus on the lateral images and they were lateral to the cervical esophagus on the frontal images (2).

There have been some case reports about Zenker's di-

verticula mimicking thyroid nodules during US (3 - 6). To the best of our knowledge, there is only one report in English literature about Killian-Jamieson diverticulum detected by US. Zenker's diverticula are generally reported to be nearly four times as common as Killian-Jamieson diverticula (1). In addition, Killian-Jamieson diverticula are often smaller than Zenker's diverticula and they are usually left-sided, although bilateral cases have been reported. They may have either a broad or small neck (2).

In the previously published reports, many authors have suggested some consistent sonographic findings of esophageal diverticula, including Zenker's diverticula and Killian-Jamieson diverticula, and these findings can be used for distinguishing them from thyroid nodules (1, 3 - 6). The principal sonographic differential features are as follows: first, strong echogenic foci or horizontal lines that suggest the presence of air, but that resemble those of thyroid nodules, including calcification, are observed in almost all cases, Second, the wall of the lesion shows a multilayered pattern, and this suggests that the digestive tract is the origin of the lesion (its contiguity with the esophagus is also helpful for the differentiation of diverticula from thyroid nodules); last, there are chronological changes in the internal echo that are associated with changes in the contents of the diverticulum such as air, water and debris, and these changes result from compression with a probe or the action of swallowing air and water.

In our study, the first case was misdiagnosed as a calcified thyroid nodule, which was probably due to the

absence of any demonstrable connection between the diverticulum and the cervical esophagus by US and the misinterpretation of the continuous curvilinear echogenic lines as the calcified wall of the thyroid nodule. However, the FNA procedure could have been avoided by giving consideration to other US findings such as some echogenic foci within the lesion and the multilayered pattern of the wall. Thanks to our first experience of Killian-Jamieson diverticulum detected on US, the second Killian-Jamieson diverticulum was correctly diagnosed by US only.

In conclusion, we present here two cases of Killian-Jamieson diverticula that were initially misdiagnosed as thyroid nodules. As was previously mentioned, the sonographic characteristics of esophageal diverticula differ from those of true thyroid nodules; this should be kept in mind by radiologists and especially by those physicians who perform thyroid US and FNA for thyroid nodules. Such consideration will help to avoid un-

necessary invasive procedures for extrathyroidal lesions such as the esophageal diverticulum in our first case.

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