Cushing’s syndrome managed by endoscopic ultrasound-guided radiofrequency ablation of adrenal gland adenoma

A 38-year-old woman presented with “moon face,” “buffalo hump,” and weight gain of 9 kg in 12 months. Overnight, 1 mg dexamethasone failed to suppress the morning level of cortisol, and the 24-hour urine cortisol level was elevated to 101 μg/day (normal range 0–50). Initial contrast-enhanced abdominal computed tomography (CT) showed a 2.8-cm left adrenal mass enhanced in arterial phase, and the patient was diagnosed with Cushing’s syndrome due to left adrenal adenoma (Fig. 1a). She refused surgical treatment but agreed to undergo endoscopic ultrasound-guided radiofrequency ablation (EUS-RFA; STARmed, Koyang, Korea) Video1. Prior to RFA, contrast-enhanced EUS with SonoVue (Bracco, Inc., Milan, Italy) was performed. Findings of early enhancement and delayed washout were compatible with adrenal adenoma (Fig. 2a). A 19-gauge needle electrode was positioned inside the adenoma. Using real-time EUS imaging, RFA (50 W) was performed at five different sites (Fig. 2b). Four days later contrast-enhanced EUS revealed viable tissue remaining at the marginal edge of the previously ablated portion of the adenoma (Fig. 3a). EUS-RFA was repeated at five more sites in the remaining viable tissue (Fig. 3b). Follow-up CT at 1 week showed the adrenal mass almost completely replaced with necrotic tissue, without complications (Fig. 1b). Serum and urine cortisol levels returned to normal the following day and remained normal for the next 2 months, with no adverse events related to RFA. However after the third month, the cortisol levels were re-elevated and this time the patient agreed to surgery.

Until recently, there were only a few case reports of RFA for the treatment of Cushing’s syndrome; all of them were treated via the CT-guided percutaneous method [1,2]. The present case is the first in which EUS-RFA was used to manage Cushing’s syndrome caused by adrenal adenoma. This case report supports EUS-RFA as a safe and feasible alternative method that should be considered in patients who refuse surgical treatment. Further evidence and experiences are required.

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Competing interests

None

VIDEO 1

Video 1: Endoscopic ultrasound-guided radiofrequency ablation performed on a left adrenal adenoma for the management of Cushing’s syndrome.
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Fig. 2 Endoscopic ultrasound-guided radiofrequency ablation (EUS-RFA) of the left adrenal adenoma. a Contrast-enhanced EUS with early enhancement. b The EUS-RFA needle positioned inside the adenoma.

Fig. 3 Contrast-enhanced endoscopic ultrasound (EUS) 4 days after the first EUS-guided radiofrequency ablation (RFA) treatment. a Central hypo-echogenicity with enhancement remained at the marginal edge of the adenoma. b Repeat EUS-RFA was performed.