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) (▶Video 1).

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.

Endoscopy_UCTN_Code_TTT_1AS_2AD

Competing interests

None

The Authors

Sun-Ho Lee, Dong Wan Seo, Dongwook Oh, Tae Jun Song, Do Hyun Park, Sang Soo Lee, Myung-Hwan Kim

Division of Gastroenterology, Department of Internal Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea


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Corresponding author

Dong Wan Seo, MD, PhD
Division of Gastroenterology, Department of Internal Medicine, Asan Medical Center, University of Ulsan College of Medicine, 88, Olympic-Ro 43-Gil, Songpa-gu, Seoul 138-736, Korea, Fax: +82-2-4855782, dwseoamc@amc.seoul.kr

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DOI http://dx.doi.org/10.1055/s-0042-118165
Endoscopy 2017; 49: E1–E2
© Georg Thieme Verlag KG Stuttgart · New York
ISSN 0013-726X

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.