We present a rare imaging case of the lipomatous hypertrophy of the interatrial septum (LHIS), which may be correlated with arrhythmia and sudden death. We discuss the possible presence of brown adipose tissue within LHIS.

A 70-year-old female, with pancreatic cancer, underwent a positron emission tomography (PET/CT) examination during follow-up to evaluate the presence of metastases. Two months before the scan, the patient was treated with a pancreatoduodenectomy, which was complicated by an abscess. The PET/CT showed some post-operative inflammatory lesions in the area of surgery and no metastases were found. However, some unusual increased cardiac $^{18}$F-fluorodeoxyglucose ($^{18}$F-FDG) uptake was noted (Figure 1). The focus was located in the area of the interventricular septum. The area had a density of adipose tissue and the following dimensions: $27 \times 14 \times 36$ mm. The $^{18}$F-FDG uptake was relatively high (maximum standard unit value = 5.7).

Until now, the patient did not suffer from any cardiovascular disease, the echocardiogram did not reveal any pathologies of the heart. Due to the unusual finding, the patient was referred to a cardiologist. The patient underwent the 24-hour monitoring of the electrocardiogram,
which did not show any significant arrhythmia. In order to exclude an intracardiac malignancy, the patient was referred to cardiac magnetic resonance (CMR), since it can characterize the cardiac tissue and indicate malignancies [1]. The CMR examination consisted of: the cine images, T1-, T2-, T2*-weighted images with or without fat suppression, T1-mapping, and late gadolinium enhancement (LGE) 10–15 minutes after intravenous gadolinium contrast injection [2, 3]. The CMR images showed hyperintense signal on T1-weighted sequences before and after contrast injection and on LGE. Native T1-maps of the mass was 174 ms which confirmed the lipomatous tissue.

Based on the CMR, the LHIS was diagnosed. Further management of the pancreatic cancer in this patient included chemotherapy. A follow-up PET/CT scan performed seven months later confirmed complete cancer remission. Interestingly, there was no increased 18F-FDG uptake in the interventricular area on the follow-up scan.

The lipomatous hypertrophy of the interatrial septum is usually a benign disease and appears as diffused thickening of the septum extending from fossa ovalis to the posterior wall of the right atrium and between great vessels [1]. It is rarely diagnosed, usually unintentionally, on echocardiography, CMR, or autopsy. Adipose tissue is physiologically present around the heart, however, in LHIS, there is a relevant idiopathic increase of the adipose tissue mass. LHIS may stay asymptomatic or cause a supraventricular arrhythmia or even sudden cardiac death [4]. Fortunately, our patient was free from life-threatening arrhythmia throughout the observation period. Further observation is still needed.

The conflicting results of two PET/CT scans in an individual patient are relatively common and the mechanism of 18F-FDG uptake in LHIS is controversial [2, 5]. It may indicate the presence of metabolically active brown adipose tissue (BAT) within the LHIS. BAT presents different metabolic activities depending on body temperature. BAT is activated by exposure to cold and is associated with thermogenesis. Some studies demonstrated the different 18F-FDG uptake, caused by BAT metabolic activity in some adults [5].

**Article information**

**Conflict of interest:** None declared.

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