

Imaging struma ovarii by means of $^{124}\text{I-Na}$ PET/CT

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[Received 5 III 2013; Accepted 10 VI 2013]

Abstract

Struma ovarii is a rare form of ovary tumour defined as the presence of ectopic thyroid tissue in the ovarian structures. It usually presents with a benign course, although in some cases carcinoma or other malignant tumours can be found in the context of the ectopic tissue. Herein we report the case of a young patient affected by struma ovarii visualized by means of $^{124}\text{I-Na}$ PET/CT. Thanks to the excellent target-to-background ratio of the tracer and the high resolution of the method, we could well identify the presence of some minimal tumour at the level of the left ovary. To our knowledge, this is the first report of its kind.

KEY words: struma ovarii, $^{124}\text{I-Na}$, positron emission tomography, PET, PET/CT

Nuclear Med Rev 2013; 16, 2: 95–96

Case report

Struma ovarii is a rare form of ovary tumour, accounting for 1% of the ovarian neoplasia, and defined as the presence of ectopic thyroid tissue in the ovarian structures [1]. It usually presents with a benign course, although in some cases carcinoma or other malignant tumours can be found in the context of the ectopic tissue [2, 3].

Herein we report the case of a young patient affected by struma ovarii, which was incidentally diagnosed during a caesarean delivery. Our 29-year-old patient had the removal of an ovarian cyst dur-

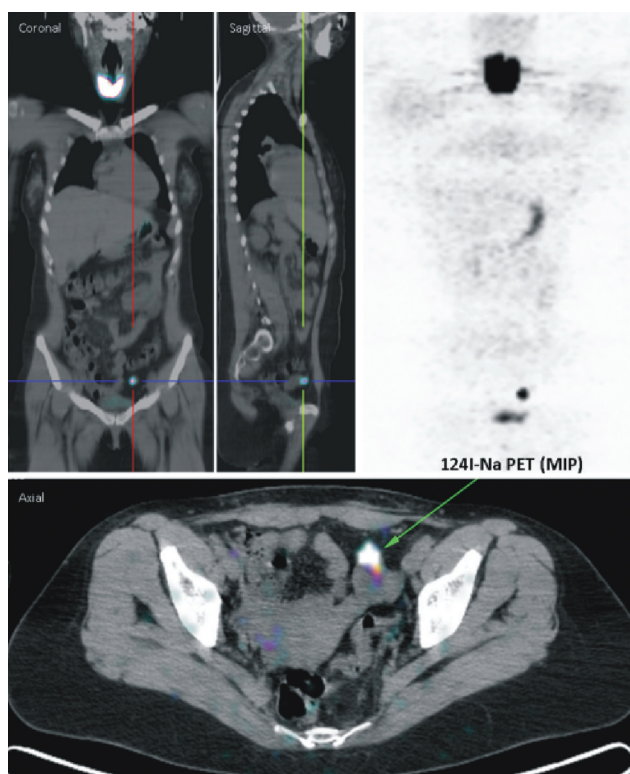


Figure 1. Maximal Intensity Projection (MIP) image of $^{124}\text{I-Na}$ PET/CT and fused coronal, sagittal and axial sections, showing the ectopic tissue present in the left ovary (arrow); for the study the patient received an I.V. injection of 212 MBq (5.7 mCi) of $^{124}\text{I-Na}$, and images were acquired 24 hours later ($T_{1/2}$ 4.2 days) by means of a 3D PET/CT tomograph (Siemens Biograph 6 LSO: 3.5 min/bed position, 128×128 matrix, zoom 1.0, 95 mAs, 130 kV and 5 mm collimation 6×3 mm for the localization CT; OSEM iterative algorithm). Along with the pathologic tracer accumulation, we could also identify some physiologic uptake in the thyroid gland, as well as in the stomach and in the bladder, due to salivary and urinary excretion

ing the delivery and histology showed a well-differentiated papillary carcinoma of thyroid origin. Specific investigations of the thyroid gland, including ultrasound, made the possibility of malignant transformation of the ectopic tissue unlikely, thus suggesting that the degeneration found in the struma ovarii had an in-loco origin (non-metastatic). Before undergoing further treatment [4, 5], we decided to perform a total-body PET/CT scan with $^{124}\text{I-Na}$ (Figure 1). Thanks to the excellent target-to-background ratio of the tracer and

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the high resolution of the method (~ 0.5 cm), we could well identify the presence of some minimal tumour residue (diameter = 0.6 cm; ki67 $\sim 25\%$) at the level of the left ovary (arrow). This could not be imaginable with other methods, including total-body $^{123}\text{I}/^{131}\text{I}$ -Na scan, because of the suboptimal resolution (1.0–1.5 cm) or CT/MR, because of the inadequate specificity.

To our knowledge, this is the first report of its kind, documenting the presence of struma ovarii by means of ^{124}I -Na PET/CT.

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