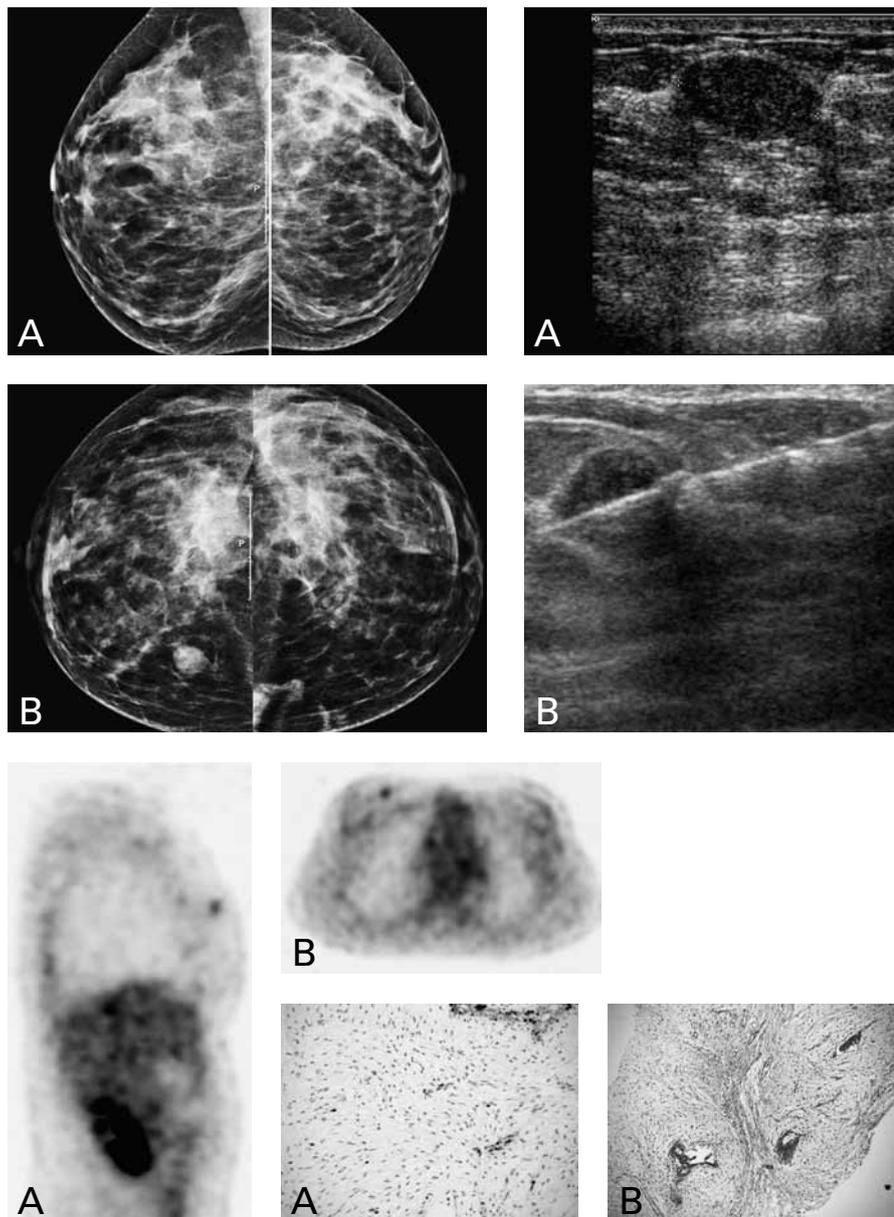


## FIBROADENOMA OF THE BREAST WITH POSITIVE PET-SCAN

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**Key-word:** Breast neoplasms

**Background:** A 26-year-old female with multiple endocrine neoplasia type 2A presented with an elevated serum calcitonin (710 ng/L, normal range 0-12 ng/L) and carcinoembryonic antigen (CEA, 110 µg/L, normal range 0.0-3.0 µg/L) during routine checkup. Eleven years before, at the age of 15, she was surgically radically treated for a medullary thyroid carcinoma. Otherwise the medical history was unremarkable. There were no palpable abnormalities in the breasts.



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Fig. 

1A	2A	
1B	2B	
	3B	
3A	4A	4B

## Work-up

On bilateral mammography (Fig. 1) (A, mediolateral view, B, craniocaudal view), an oval well-circumscribed density is seen on the craniocaudal view medially in the right breast. The mediolateral oblique view at the right side and both views on the left side were unremarkable.

Breast ultrasonography (Fig. 2) shows on A an oval well-circumscribed hypodense lesion with a maximal diameter of 16 mm is seen in the right medial upper quadrant. Under ultrasonographic guidance 14 G needle biopsies were obtained for histological analysis (B).

On whole body <sup>18</sup>F fluorodeoxyglucose PET scan (Fig. 3) (A, reformatted image in the sagittal plane, B, transverse image, a focal area of increased uptake in the medial upper quadrant of the right breast is seen. The maximum standardized uptake value (SUV-max) was 1.8.

Histopathology of a PET positive fibroadenoma (Fig. 4) show on A HE staining showing normal stromal cellularity. Immunohistochemistry (B) shows about 5% stained stromal cells.

## Radiological diagnosis

In a young female with multiple endocrine neoplasia and on positron emission tomography a mass lesion is detected in the right breast. Pathological examination proved the lesion to be a fibroadenoma without signs of malignancy. The percentage of stromal Ki67 positive cells was 5%.

## Discussion

Although breast cancer or metastases to the breast are the most common causes for PET positive breast lesions, rarely also breast fibroadenoma can be a cause of a positive PET scan. To our knowledge this is only the third case of a PET positive fibroadenoma described in the literature. One previous case was interestingly a 16-year-old girl with

a medullary thyroid carcinoma and also a borderline elevated calcitonin who had multiple PET positive fibroadenomas. It has been described that breast carcinomas can excrete calcitonin and CEA, but for fibroadenoma this has not been reported. Because of this previous very similar case report we hypothesise that the fibroadenoma might be the source of CEA and calcitonin elevation. In the biopsy specimen, however, CEA and calcitonin immunohistochemical stains were both negative. The other reported case concerned a 14-year-old girl with a neuroendocrine abdominal tumor and a giant fibroadenoma. It is remarkable that, in the era of increasing use of PET imaging, only very few cases of positive PET scan with fibroadenoma of the breast have been reported and that in all cases the patients were young (14, 16 and 26 years). Apparently, especially fibroadenomas at young age are positive on FDG-PET scans, although the reason remains unclear. Known variables that are associated with PET positivity, such as increased stromal cellularity, high proliferation, and Glut1 expression were not present in this reported case.

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