

CLINICAL CASE - TEST YOURSELF

Breast Imaging

Breast lesion incidentally detected with chest CT

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PART A

A 76-year-old female patient was admitted in our hospital with acute cholangitis. Owing to prolonged fever and negative chest X-ray, a chest CT was requested three days later. Chest CT was performed according to our department's standard protocol (Fig. 1).

An incidental finding was an enhancing, irregular mass lesion of the left breast. The lesion was characterized as sufficiently suspicious to warrant dedicated diagnostic work-up. Ultrasonographic examination and cytopathology are shown on Fig. 2 and Fig. 3 respectively.



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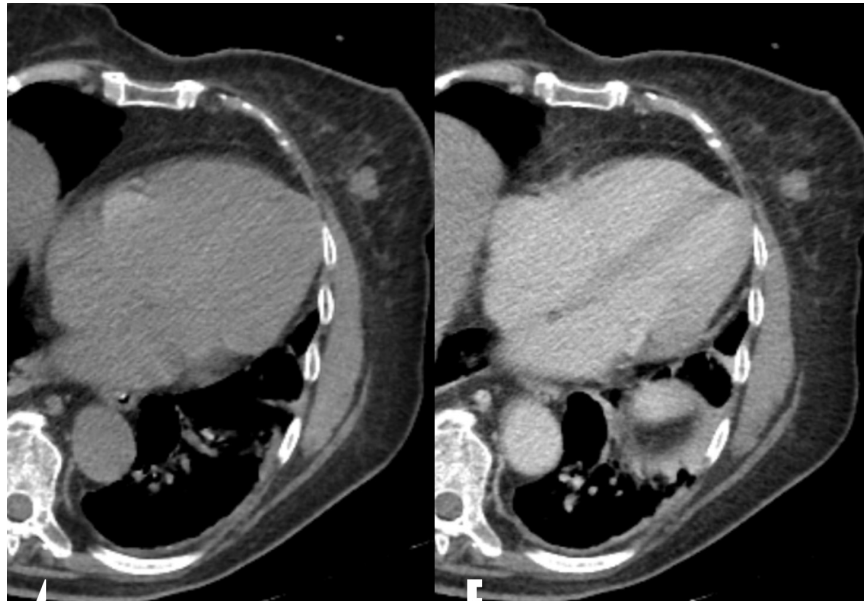


Fig. 1. Pre- and post- IV contrast axial chest CT.

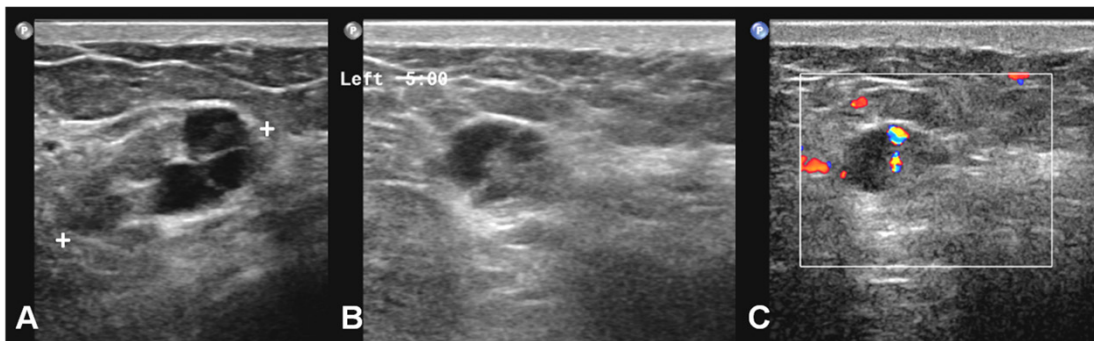


Fig. 2. Focused ultrasonographic assessment of the lesion.

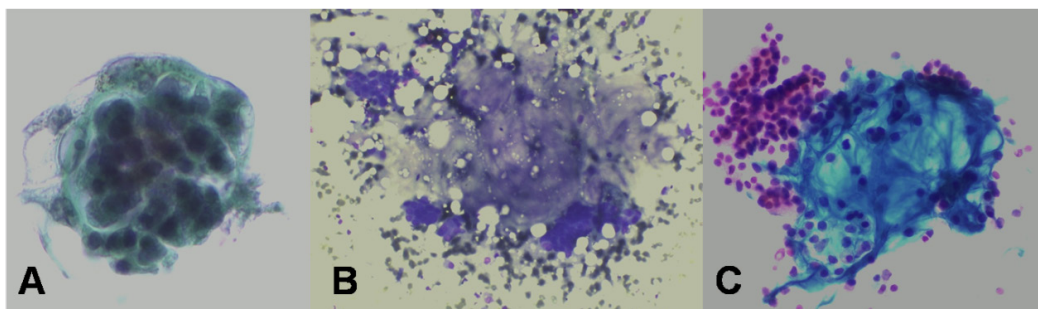


Fig. 3. FNA-Cytopathology using the conventional method and liquid-based cytology method.

PART B

Diagnosis: Mucinous carcinoma of the breast incidentally detected with chest CT

A chest CT is usually performed for screening or diagnostic indications other than breast disease.

Routine chest CT imaging is not optimized for evaluating the mammary gland; however, abnormal findings of the breasts may occasionally become apparent incidentally [1]. Several studies have investigated the morphologic features and associated histopathology of such incidentalomas [2-7]. The concurrently imaged breasts should be thoroughly evaluated when assessing chest CT examinations for other diagnostic purposes. Furthermore, the general radiologist should be confident to indicate suspicious lesions and to propose further dedicated work-up with mammography, ultrasound or MRI.

Abnormal breast findings are sometimes overlooked or understated when evaluating chest or abdomen CT examinations for other diagnostic indications. General radiologists are responsible for also carefully inspecting the breasts included in chest or abdomen CT scans and report appropriately with regard to incidental findings, making suggestions regarding management. Suspicious incidentalomas should be followed up with further dedicated diagnostic procedures and, if appropriate, histopathological evaluation. It is important to emphasize that according to literature, incidental primary breast cancer detection rate with CT ranges from 0.3% to 0.5% [5-6, 8-10]. Communication of significant findings to the referring physician and the patient is essential in order for clinically relevant pathology not to be ignored.

Few studies have addressed the significance of imaging characteristics of incidentally CT-detected breast mass lesions [2-7]. Irregular or lobulated margins, contrast-enhancement and/ or the presence of associated axillary lymphadenopathy have been associated with malignancy. CT prominent calcifications are usually indicative of benignity [2]. Fine, pleomorphic calcifications of a size

less than 0.5mm that have a higher probability of malignancy are usually indiscernible with CT. Any CT detected breast mass lesion comprising possibly benign characteristics deserves comparison with prior screening examinations if available or should be appropriately followed-up with dedicated breast imaging (mammography/ultrasound) to document long-term stability [1]. Unfortunately, there is a considerable overlap between the features of benign and malignant incidentalomas.

In our case the incidental lesion was assessed as suspicious based on a combination of patient's age and CT imaging features consisting of enhancing mass lesion with irregular contour in an otherwise adipose rich breast parenchyma. Breast oedema, skin thickening, enlarged axillary or internal mammary lymph nodes were not evident. Mammography and/or ultrasound of the left breast were recommended to r/o malignancy. This was immediately communicated to the patient who consented to an ultrasound examination. Concurrently performed focused sonographic assessment of the left breast, revealed a micro lobulated, mixed echogenicity lesion, with indistinct margins on one side, comprising both cystic and solid component. The adjunct of colour Doppler imaging allowed the visualization of penetrating vessels within the complex cystic mass (Fig. 2) [10]. According to the ACR BI-RADS US lexicon classification, the mass was regarded as BI-RADS 4B and core needle biopsy was proposed. The patient refused but consented to fine needle aspiration (FNA) instead. FNA is not the gold-standard anymore, but it is accepted when core biopsy is not available or feasible. It should be noted at this point however that FNA cytopathology cannot provide a definite differentiation between pure and mixed mucinous carcinoma of the breast [10]. Mammography could have been performed in addition to ultrasound, to evaluate the mammographic characteristics of the lesion and the contralateral breast as well; however, the patient was severely ill and bedridden.

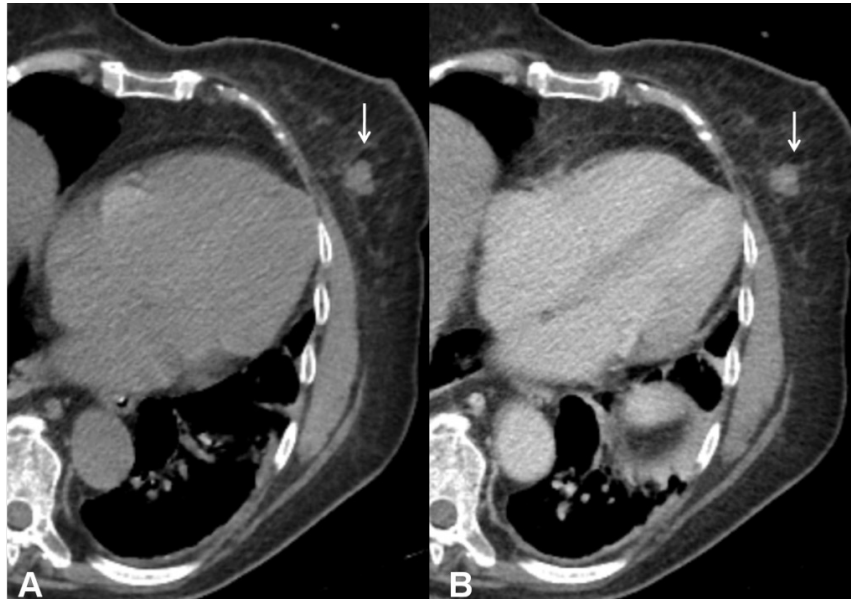


Fig. 1. Incidental left breast mass lesion detected with chest CT. **A.** Non- Contrast chest CT. A left breast lesion was noted (arrow) showing lobulated contour and irregular margins measuring a maximum diameter of 1.3cm. **B.** Contrast- enhanced chest CT. The mass (arrow) exhibited mild enhancement following intravenous contrast. The left breast background was adipose-rich and comprised sparse fibroglandular tissue.

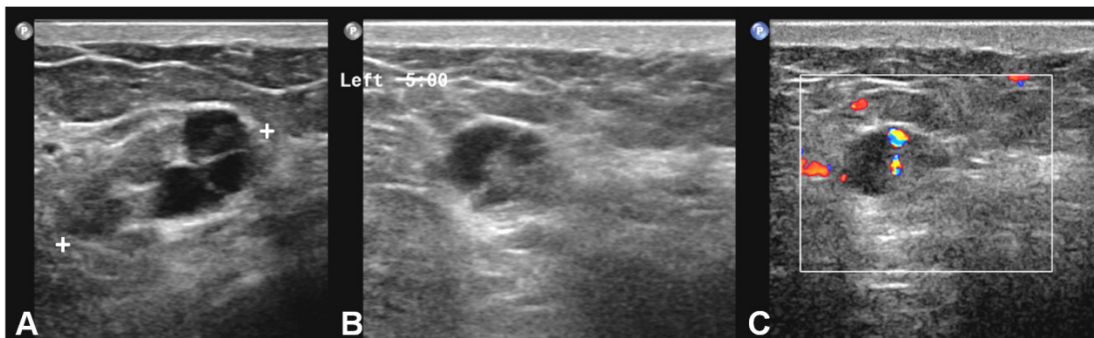


Fig. 2. Focused ultrasonographic assessment. **A.** Grey scale ultrasound. At the lower outer quadrant of the left breast, a complex mass lesion comprising both solid and cystic component with internal septations was identified (between callipers). **B-C.** Grey scale and corresponding colour Doppler images, different plane. The vascularized solid component of the lesion is shown.

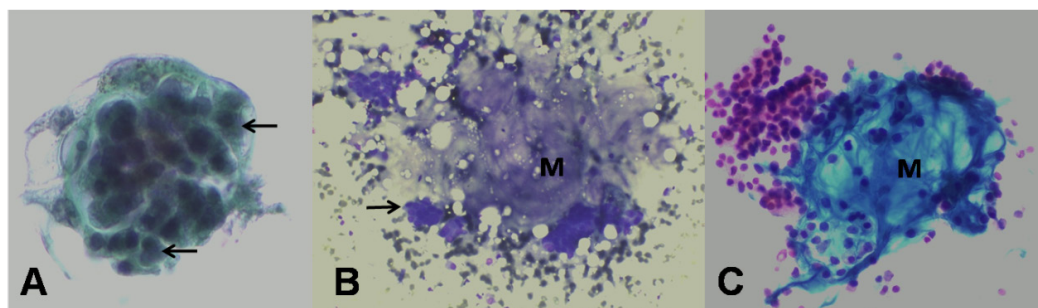


Fig. 3. FNA - Cytopathology using the conventional method and liquid-based cytology method. **A.** LBC/ Thin Prep/ Pap stain (40X). 3D cell clusters with moderate nuclear atypia and intracytoplasmic vacuolization (arrow). **B.** MG Gimsa stain (20X). Moderate cellularity (arrow) with atypical cells and abundant mucous background (M). **C.** Alcian blue stain (20X). The presence of extracellular mucin (M) was confirmed.

In conclusion, with the increasing use of chest CT for screening or diagnostic procedures, clinically occult breast lesions often become incidentally apparent. Abnormal CT breast findings warrant additional evaluation with dedicated imaging to rule out malignancy. Few studies have assessed the significance of imaging features of incidentally CT-detected breast lesions.

The general radiologist should be familiar with suspicious characteristics of incidentally CT detected breast lesions in order not to miss clinically significant disease, to guide further management and to facilitate a prompt diagnosis. **R**

Conflict of interest

The authors declared no conflicts of interest.



KEY WORDS

CT; incidental breast lesion; US; mucinous carcinoma of the breast



**READY-MADE
CITATION**

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