Fat–fluid level in a silicone breast implant on computed tomography

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Case Presentation

A woman in her 20s presented with a 1-month history of intermittent fever and pleuritic right lower chest pain. She denied cough or sputum production, and there was no erythema, swelling, skin discoloration, or discharge involving the chest wall or breasts. C-reactive protein (CRP) was elevated at 7.68 mg/dl, whereas blood cultures were negative. She initially reported no history of surgery or other procedures.

Contrast-enhanced chest computed tomography (CT) showed no evidence of pneumonia or pulmonary embolism. However, a sharply defined horizontal interface was incidentally identified within the right breast implant. On lung-window images, the nondependent component was hypoattenuating but was not as lucent as tracheal air. Attenuation measurements showed −102 Hounsfield units (HU) in the nondependent cap, 20 HU in the dependent layer, and 54 HU in the surrounding implant contents, showing fat-range, fluid-attenuation, and silicone-density values, respectively (Figure 1). Thus, the horizontal interface was considered to represent focal fat-fluid stratification rather than an air–fluid level.

On repeat history taking, the patient disclosed that she had undergone cosmetic breast augmentation with silicone implants 18 months earlier. Given the fever, chest pain, elevated CRP level, and abnormal intra-implant CT finding, implant-related complications, including rupture, were considered, and she was referred to a breast/plastic surgery service. No follow-up information was available after referral; therefore, the final implant diagnosis and its relationship to the clinical presentation remained unknown.

Fluid-fluid stratification has been reported on magnetic resonance imaging in surgically confirmed silicone breast implant rupture without typical shell collapse [1]. In the present case, the nondependent component showed clear fat-range attenuation of −102 HU, allowing the finding to be recognized as fat-fluid stratification.

The origin of the fat-range component remains uncertain, but lipid-related material may have contributed. Lipid infiltration of silicone implant shells has been demonstrated [2], while cholesterol metabolites considered to originate from surrounding breast tissue have been detected in silicone gel from explanted breast implants [3].

When an apparent air-fluid level is encountered within a breast implant on CT, attenuation measurement may reveal an unexpected fat-fluid level instead.

What is new

This case shows that CT attenuation measurement can distinguish a fat–fluid level from apparent intraluminal gas.

Conflicts of interest

The authors declare that they have no conflict of interest regarding the publication of this article.

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Consent for publication

The patient provided written informed consent for publication of her case data and the accompanying image.

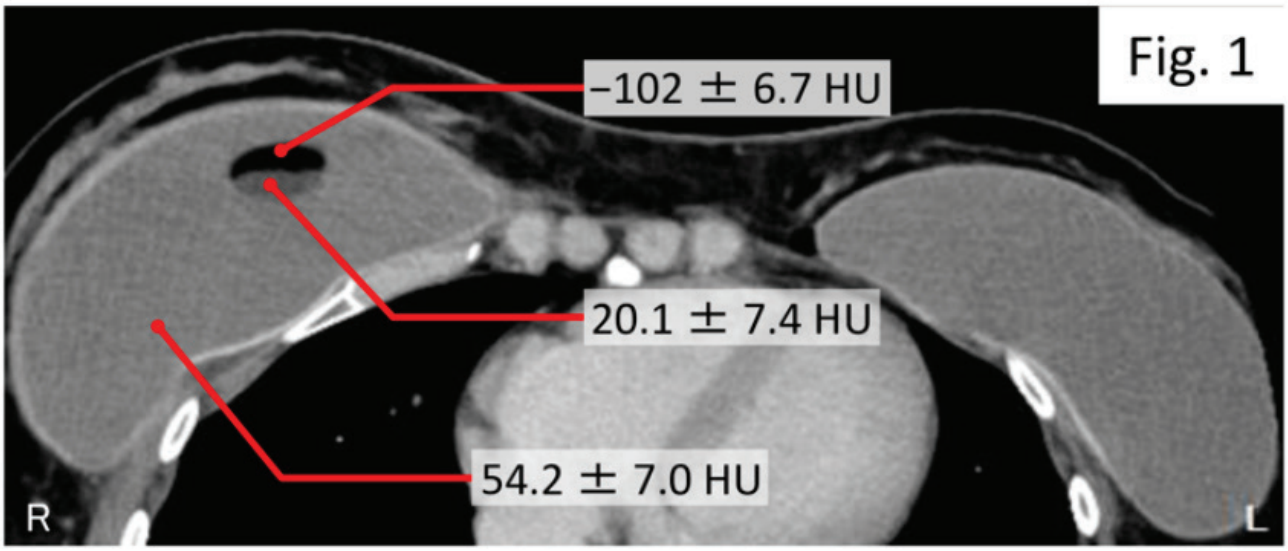


Figure 1. *Contrast-enhanced axial CT (mediastinal window) shows a focal intra-implant stratified structure with a sharp horizontal interface. Attenuation was measured using circular regions of interest placed within each component, avoiding the implant shell and visible interfaces. Values are reported as mean ± SD (min-max) in HU: nondependent layer −102 ± 6.7 (−118 to −85) HU; dependent layer 20.1 ± 7.4 (1-36) HU; surrounding silicone-density implant contents 54.2 ± 7.0 (34-74) HU.*

Ethical statements

Ethical approval is not required at our institution for anonymous case image reports.

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