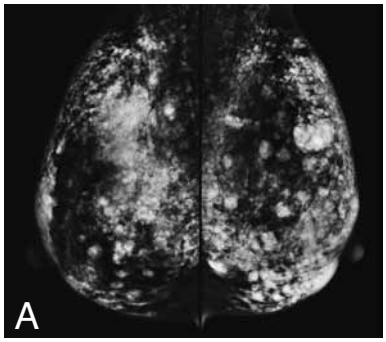
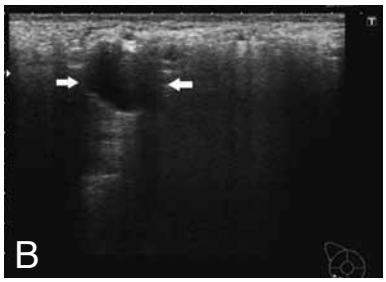
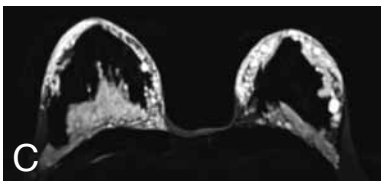
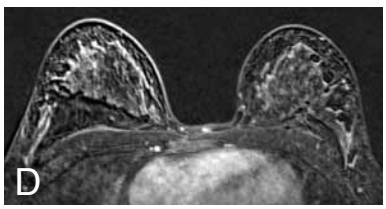
JBR–BTR, 2012, 95: 34.

IMAGES IN CLINICAL RADIOLOGY









Breast augmentation by injection of free silicone: MRI findings

K. Vanwambeke[1], I. Wittevronghel[2], S. Dekeyzer[1], C. Petre[1], F.M. Vanhoenacker[1,3]

A 23-year-old Asian women was referred because of bilateral breast tenderness. Her past medical history includes a bilateral breast augmentation by liquid silicone injection at multiple sites at the age of 19. Clinical examination was unremarkable. The axillary nodes were not palpable.

Mammography shows multiple nodular densities in both breast dispersed subcutaneously and in the prepectoral area (Fig. A). The breast tissue itself is almost completely obscured by widespread of nodular densities.

The penetration of the ultrasound beam was blocked by free subcutaneous silicone presenting as hyperechogenic infiltration with interspersed confluent areas of liquid silicone causing the "snowstorm sign". Note also the presence of an adjacent cyst in the left breast (arrows) (Fig. B).

For evaluation of the adjacent breast tissue, subsequent magnetic resonance imaging (MRI) was performed. On fat suppressed turbo spin echo T2-weighted images (WI) the fibroglandular tissue was hypointense and surrounded by the T2 hyperintense conglomerates of liquid silicone diffusely dispersed in the subcutaneous and prepectoral fat. An additional T2-sequence with fat and water suppression confirmed the persisting high signal of silicone distinguishing it from fluid content of the cyst in the left breast (Fig. C). Gradient echo T1-WI before and dynamic after contrast were performed. On subtraction images only the periphery of the glandular tissue shows some enhancement due to physiological premenopausal hormonal proliferation of the glandular tissue (Fig. D). The time-signal intensity curves showed normal slowly continuous enhancement kinetics of the glandular tissue (type 1 curve). There was no morphological distortion of the breast tissue.

A waitful watching policy and meticulous follow-up by MRI was recommended to allow early detection of breast cancer.

Comment

Direct injection of liquid silicone into the breasts as method of breast augmentation was once widely used in Asia because it is cheap, quick and simple to perform.

This technique has been banned for many years because of the multiple complications. Some cases – however – are still reported in illegal cosmetic procedures.

The most frequent minor complications include palpable masses, breast tenderness or pain, asymmetry of deformity due to foreign-body granulomatous reaction and fibrosis. These adverse effects can cause psychological problems because of fear for cancer.

A lot of major complications have been reported. The most frequent is infection and secondary abscess formation because this procedure is done illegally under bad aseptic conditions.

Small amounts of silicone can migrate to the axillary lymph nodes and axillary fat, and accumulate into different organs causing embolism or granuloma formation.

Deposits of silicone in the lungs are responsible for the "silicone embolism syndrome" presenting with a variety of symptoms, such as dyspnea, fever, cough, hemoptysis, chest pain, hypoxia and altered consciousness.

Early diagnosis of breast cancer is impaired by the silicone-induced mastopathy which renders the interpretation of physical findings and conventional imaging methods difficult.

Mammography is compromised by the high density and nodular aspect of the silicone granulomas and architectural distortion due to fibrosis.

The sonographic appearance of free silicone is called the snowstorm pattern consisting of diffuse intra-and extraparenchymal shadowing.

Dynamic contrast-enhanced magnetic resonance imaging of the breasts is the method of choice to investigate the glandular tissue, to exclude and prevent late detection of cancer. The signal intensity of silicone and the formation of foreign-body granulomas is not disturbing the quality of the images. Analysis of the morphology of lesions and contrast kinetics on dynamic enhanced MRI can help in differentiation of cancer from fibrosis or infection.

Reference

1. Yang N., Muradali D.: The augmented breast: A pictorial review of the abnormal and unusual. *AJR*, 2011, 196: W451-W460.

Department of 1. Radiology, 2. Gynecology, AZ Sint-Maarten, Duffel-Mechelen, Duffel, Belgium, 3. Department of Radiology, Antwerp University Hospital, Antwerp University and Ghent University.