INTRODUCTION

Several different injectable materials have been used for breast augmentation in females, such as liquid silicone, autologous fat, liquid paraffin, and polyacrylamide gel (1-3). Imaging findings for each material are well-known, with typical mammographic and sonographic features; hence, their presence is readily diagnosed. However, a spiculated mass or diffuse infiltrative change can sometimes mimic breast malignancy or other systemic diseases (4). In this report, we present a bilateral diffuse infiltrative disease that mimics the imaging findings of a male patient who underwent foreign material injection for breast augmentation.

CASE REPORT

A 64-year-old male patient was presented to our breast center with a diagnosis of gradual breast enlargement when he was an inpatient at our hospital for cerebral infarction. On physical examination, the patient had bilateral enlarged breasts, retracted nipples, and scarring on the mid-upper side of the left breast.

An ultrasound examination was initially undertaken for gynecomastia. A two-dimensional ultrasound (IU22, Philips Medical System, Bothell, WA, USA) with a high-frequency probe (5-12 MHz linear transducer) showed bilateral, severely thickened skin and diffuse edematous change along the subcutaneous fat layer. A few cysts, which were variable in size and round-to-oval hypoechoic masses, were seen in both breasts. In the center portion of both breasts, there were ill-defined hypoechoic lesions with posterior acoustic shadowing were noted in both breasts.

Index terms
Injection Mammoplasty
Mammography
Breast Sonography

Foreign material injection for breast augmentation has been performed for decades, primarily in Asia. Various materials have been used clinically for injection; their typical imaging findings are well-known and have been reported in many cases. However, these cases usually involve an injection of a foreign material for female breast augmentation. We report here the unusual imaging findings in a 64-year-old male with lipogranulomatous inflammatory changes in his breast, caused by an interstitial injection of paraffin. Mammograms show the enlargement of both breasts as well as an increased density with combined skin and trabecular thickening. Ultrasoundography revealed bilateral, severely thickened skin and diffuse edematous change along the subcutaneous fat layer. Further, a few oil cysts and ill-defined hypoechoic lesions with posterior acoustic shadowing were noted in both breasts.
Interstitial Injection Mammoplasty Mimicking Diffuse Infiltrative Disease in a Male Patient

About 14 months later, the patient revisited our breast center due to exacerbated breast enlargement and heating sensation. He underwent an ultrasound examination again as well as an ultrasound-guided core biopsy using a 14-gauge needle, which led to the pathological diagnosis of lipogranulomatous inflammation with severe sclerosis in both breasts (Fig. 2). A pathologist recommended that we should check for a history of interstitial injection. The patient then admitted that he had undergone bilateral breast injection with his friends just for fun almost 30 years ago. He was not forthcoming about the details of this procedure.

**DISCUSSION**

The injection of various materials for breast augmentation was first used in the early 1900s (2, 3). Several injectable materials, such as liquid silicone, autologous fat, liquid paraffin, and polyacrylamide gel have been used for breast augmentation in females. Liquid silicone injection appears on mammography as well-defined, rounded, peripherally calcified masses (2). Liquid paraffin injection appears as circumscribed, noncalcified masses, streaky opacities, architectural distortion, or dystrophic or ring-like, calcified indistinct mass (paraffinoma) on mammography (2, 3). Autologous fat injection is presented as various forms of fat necrosis on mammography. Polyacrylamide gel injection appears as a single or multiple fluid collections in the ret-
Pathological examination revealed lipogranulomatous inflammation with severe sclerosis, compatible with the injection of paraffin. Lipogranulomatous or oleogranulomatous mastitis is a well-known complication following the injection of melted petroleum jelly, such as liquid paraffin or silicon, into the breasts (8). There are two presenting types of oleogranulomatous mastitis: suppurative and nonsuppurative. In the suppurative type, masses may ulcerate and become infected to form a discharging sinus or a fistula tract. The surface skin of the breast may also show a brownish discoloration. An inverted nipple, peau d’orange or enlarged lymph node may be present. However, unlike suppurative mastitis, the skin overlying the breast is often normal in the nonsuppurative type (9).

In conclusion, foreign material injection for breast augmentation in males shows various imaging findings. Sometimes these are strongly suggestive of malignancy or other systemic disease. Radiologists should be familiar with the spectrum of the appearance of foreign material injection for breast augmentation. Regardless of sex, detailed history taking and pathological confirmation by means of core-needle biopsy are important for the prevention of misinterpretation and, by extension, mistaken treatment.

REFERENCES

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남성 환자에서 침윤성 유방질환과 혼동되는 주입 유방성형술

채인혜1, 차은숙1, 이지은1, 정진1, 성순희2

유방성형을 위해 유방에 이물질을 주입하는 것은 수십 년간 주로 아시아 지역에서 행해져 왔다. 임상적으로 사용되는 물질은 다양하며, 이들의 특징적인 영상학적 소견은 많은 증례에서 이미 보고되어 잘 알려져 있다. 그러나, 이미 보고된 증례들의 대부분은 여성 환자를 대상으로 한 것이다. 저자들은 파라핀 주입으로 지방육아증성 염증성 변화를 보인 64세 남자 환자의 특이한 영상 소견에 대하여 보고하고자 한다. 유방촬영술상 양측 유방이 매우 커져있었고, 유방 피부와 섬유주가 매우 두꺼워져 있었다. 유방초음파상 피부와 피하섬유층에 전반적인 부종성 변화가 있었으며, 몇 개의 지방낭종과 후방 음향 음영을 동반한 저에코성 병변이 발견되었다.