

Assessment of Fat Necrosis of the Breast through Mammographic and Sonographic Features

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Conflict of interest: Nil

Abstract

Aim: To analyze the importance of mammography and sonography in fat necrosis.

Material & Methods: A prospective clinicopathological study was carried out for one year period on a population of 52 patients age ranging from 30 to 60 years. The study was conducted at the Department of Radiology, Icare Institute of Medical Science and Dr. Bidhan Chandra Roy Hospital, Haldia, West Bengal, India for one year.

Results: Breast fat necrosis is a common perimenopausal female symptom. This disease can mimic breast cancer both clinically and radiologically.

Conclusion: Fat necrosis is a condition where the body's tissues accumulate dead cells and necrotic tissue. The supplied image depicts the development of a tumor, which is essentially the disposition of fat. Therefore, screening for fat necrosis in the breast using mammography and sonography is preferable.

Keywords: Breast cancer, screening, Benign, Tumors

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Introduction

Breast cancer is one of the most common causes of death among women. Fat necrosis is a form of cancer that develops slowly and does not spread. Fat necrosis is a condition that is caused when fat cells die. Fat necrosis can occur in any area of the body but is most common in the legs, arms, and buttocks. Fat necrosis can lead to pain and swelling and can be difficult to treat. Fat necrosis is a rare but serious complication of obesity that can lead to the development of life-threatening conditions such as gangrene [1, 11]. In this paper, we examine the imaging, histopathologic, and cytologic results of mammography, sonography, and MRI, as well as the histopathologic and clinical characteristics

of fat necrosis. The reader should be familiar with the various ways that fat necrosis appears in imaging investigations after reading this article. Linear and curvilinear calcifications form early in the growth of many oil cysts, while core calcifications are visible later. Patients with fat necrosis typically experience calcifications, which can occasionally be the only mammographic result [13]. The different sonographic characteristics of fat necrosis reflect the level of fibrosis.

The precise cause of fat necrosis is unknown, but it is believed to be a result of the accumulation of fat in and around the vessels that supply blood to the fat tissue. This accumulation of fat can cause

the skin and underlying tissues to become swollen and inflamed, which can lead to the development of fat necrosis. Mammography is an important diagnostic tool for fat necrosis and other common causes of pelvic pain. Mammography can help identify the presence of cancer and help in planning the best course of medical treatment [2]. In addition to that, Sonography is useful in distinguishing fat necrosis from other types of necrosis. Sonography can also help to identify the extent and severity of fat necrosis. Although the fibrous edge of the cyst could calcify or collapse and may result in a morphology that is mammographically equivocal and requires a biopsy to rule out malignancy, lipid cysts are symptomatic of benign fat necrosis [12]. Oil cysts, localized asymmetries, coarse calcifications, micro calcifications, or spiculated masses are frequent findings of fat necrosis in mammography [10]. On mammography, calcifications, which are typically visible as smooth curvilinear lesions, may develop in the cyst walls.

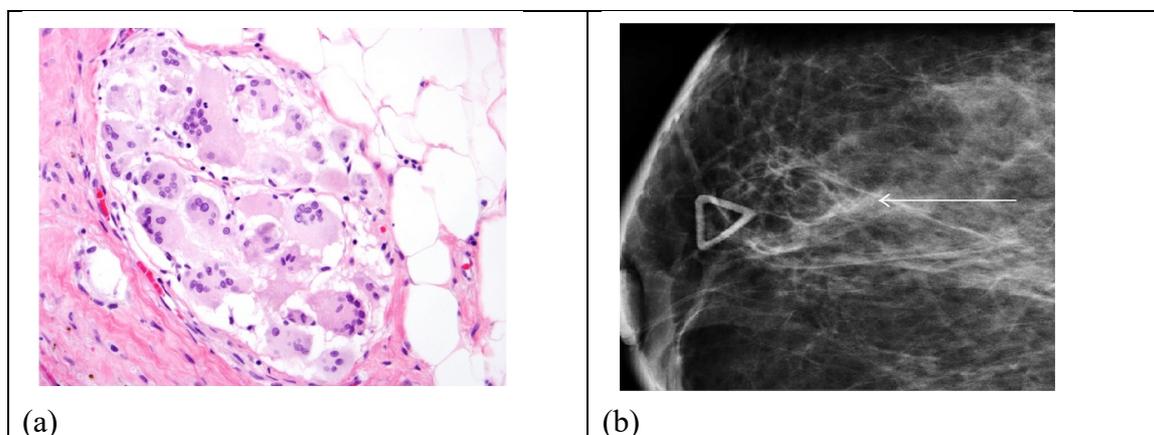
Material & Methods

A prospective clinicopathological study was conducted on 52 female patients of different age groups from 30 to 60 years. Patients' information is collected from at Department of Radiology, Icare Institute of Medical Science and Dr. Bidhan

Chandra Roy Hospital, Haldia, West Bengal, India for one year. Data has been collected for a one-year period from the imaging laboratory of the mentioned institutes to get real-time clinical information regarding patient condition. Relevant mammographic data were obtained from hospitals' imaging process that includes microscopic view as well. Medical Screening techniques such as mammography and sonography were used to obtain valid clinical insights.

Results

49-year-old female who had a transverse rectus abdominis muscle (TRAM) flap restoration following a left modified radical mastectomy. The craniocaudal and Medio lateral angled projections of the left TRAM flap repair (a) show a significant mass of dysplastic calcification and fat. A palpable mass has been discovered in a woman aged 51 years with a background of right lobular cancer in situ who had radiation and a lumpectomy. A radiolucent lobular mass may be seen at the location of a palpable mass on the right breast's Medio lateral oblique and craniocaudal projection (b) (arrow). Excision (c) histologically displays a cluster of multinucleated cells in a spongy region surrounding the excision cavity. Moreover, T1-weighted fat saturation is detected in patients of institute of radiology after gadolinium (d).



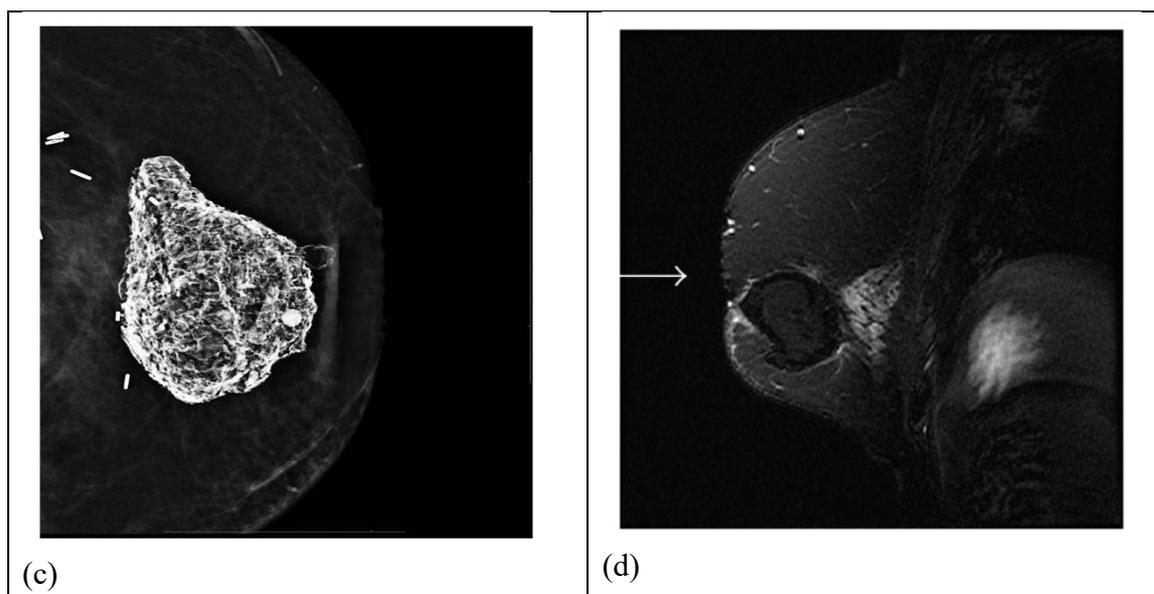


Figure 1: Left TRAM flap repair (a), craniocaudal projection (b), excision (c) and gadolinium (d).

Table 1: Clinical symptoms of 52 cases

Institution	Symptoms observed	Cases	Percentage
Institute of radiology	Presence of lump	30	57.6%
Department of cancer	Tenderness	12	23.04%
Institute of Gynecology	Bruising	10	19.2%
Department of cancer	Pain	0	0

The majority of perimenopausal women experience breast fat necrosis. Both radiologically and clinically, this condition has the ability to mimic breast cancer. It normally develops as a result of trauma; however, it can also be idiopathic. Trauma can be iatrogenic or unintentional in origin. Accidental injury examples include seat belt trauma. Breast surgery is one of the most common iatrogenic events [3]. Numerous trauma sufferers were found to have lumps. One of the likely causes of these lumps is seatbelts. Weber-Christian disease, polyarteritis nodosa, and granulomatous angio-panniculitis are a few of the additional causes [4]. For some people, the underlying etiology is still unknown.

Discussion

In a retroactive analysis of the mammographic, sonographic, and clinical characteristics of fat necrosis, 16.6% of them had posterior acoustic enhancement

and were anechoic masses; In 26.9% of the lesions, the subcutaneous tissue had enhanced echogenicity, either with or without tiny cysts; 14.2% were masses that appeared solid; 3.9% of them had mural nodules and cystic masses and 11.1% were cystic masses with internal echoes. As per the data observed from 52 patients supports that fat necrosis is non-painful issue which need biopsy and radiological analysis to detect. A mass with interior echogenic bands that change orientation in response to changes in patient posture is a unique sonographic indication of fat necrosis [5]. Malignancy is extremely rare in hyperechoic masses; less than 0.8% of tumors have been reported to have hyperechoic malignancies. Sonography is a noninvasive imaging modality that uses sound waves for the creation of images of the inside body [6]. In particular, sonography is an effective tool for the diagnosis and treatment of fat necrosis. Fat necrosis is a condition in which necrotic

tissue (dead cells) accumulates in the body tissue.

Mammography is an effective analyzing tool for detecting breast fat necrosis (BFN). In a recent systematic review, mammography was found to be the most important analyzing test for detecting BFN [14]. This review included studies that compared mammography to other screening tests for BFN, such as ultrasound and clinical examination. Mammography was found to be more accurate than ultrasound in detecting BFN and was also less likely to result in false-positive results [7]. Mammography is also less likely to cause radiation exposure than other screening tests. [15] The radiological and clinical importance of breast fat necrosis is that a biopsy may be necessary to confirm the diagnosis because it may mimic breast cancer. A lipid cyst to features worrisome for cancer, such as clustered microcalcifications, a speculated area of enhanced opacity, or a focal mass, are among the mammographic manifestations of fat necrosis [8]. Following trauma, biopsy, lumpectomy, cyst aspiration, reduction mammoplasty, breast reconstruction, radiation therapy using a transverse rectus abdominis muscle (TRAM) implant removal, flap, anticoagulant therapy, as well as in patients without a relevant medical history, the changes of fat necrosis may be observed [9].

Conclusion

Finally, it can be concluded that mammography and sonography are the two most important tools in cancer detection for the initial stage. These tools are important for breast cancer detection and help the medical system to provide the best medical facility. Sonography is a particularly useful method for identifying and treating fat necrosis. Fat necrosis is a disorder where dead cells and necrotic tissue build up in the body tissue. As per the provided picture, the formation of a tumor is reflected which is the disposition

of fat. Hence, the screening process through mammography and sonography is a better option for fat necrosis in the breast.

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