Case Report

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Oil cyst of breast: a rare mammographic finding

Vundavalli Sattibabu, Satish Dalal, Nityasha Nara, Chisel Bhatia*

Department of Surgery, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India

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*Correspondence: Dr. Chisel Bhatia,

E-mail: chiselbhatia@gmail.com

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ABSTRACT

Oil cysts of breast are rare benign breast disorders resulting from fat necrosis. Oil cysts are rare mammographic findings encountered. Here, we describe a case of 35 years female with history of breast trauma who presented with a small breast lump which was later diagnosed as oil cyst.

Keywords: Breast, Oil cyst, Trauma

INTRODUCTION

Oil cysts of breast are rare benign breast disorders resulting from fat necrosis. Fat necrosis is often considered idiopathic, but is usually caused by trauma, and many idiopathic cases are probably due to micro trauma. Trauma leading to breast fat necrosis are blunt trauma, cyst aspiration, biopsy, lumpectomy, radiation therapy, reduction mammoplasty, breast reconstruction, implant removal, and anticoagulant therapy, although it also can occur without a relevant cause. Fat necrosis has a wide spectrum of clinical and radiological appearances, varying from that of a benign oil cyst to that of a speculated mass mimicking malignancy.

CASE REPORT

A 35 years old, female presented to outpatient department with a small lump in her right breast with history of breast trauma. On examination, there was a lump of size 5x5 mm in upper outer quadrant of her right breast at 10 o'clock position, which was non-tender, freely mobile and firm in consistency. Ultrasonography showed an isoechoic lesion of size 5x5 mm seen in right upper quadrant of right breast. Mammography showed a radiolucent rounded mass of fat density with wall calcification suggestive of an oil cyst (Figure 1).



Figure 1: Mammogram showing a radiolucent rounded mass with calcific changes in the wall.

DISCUSSION

Fat necrosis is a benign non suppurative inflammatory process of adipose tissue. It most often occurs in the fatty, pendulous breasts of women in the 5th and 6th decades after blunt trauma, surgery or irradiation. Due to these factors, damage occurs mainly to adipocytes and to microvascularization, which is abundant in adipose tissue.

Vascular damage results in an immediate inflammatory reaction consisting of arteriolar contraction to check bleeding. This contraction leads to increased arteriolar and capillary pressure, which cause transudation of fluid to the interstitial space and increased pressure in the venules, which in turn increases the permeability of the venous walls, thus resulting in the loss of proteins and consequently of fluid. All these factors that contribute to the increase in the amount of fluid in the interstitial space lead to the edema that is characteristic of the hyperacute inflammatory phase.

Shortly afterward, the damaged vessels release fibrinogen into the interstitial space, where the enzyme thrombin will convert it to active fibrin. Fibrin, which is elastic and insoluble, combines with the platelets to form a mesh to control bleeding. Furthermore, the "free" fat from the adipocytes will be encompassed by a sort of defense conglomerate, granulation tissue, which is mainly composed of macrophages, leukocytes (mainly neutrophils), fibrin, fibroblasts, and angioblasts. This fatcontaining granulation tissue is called an oil cyst.

With time, the oil cyst can either calcify or it can be reabsorbed and replaced with connective tissue. It is important to understand each of these processes. The fatty acids that make up the triglycerides can react with the calcium ions in the interstitial space to form calcium stearate, which will accumulate around the granulation tissue, resulting in a sphere of varying size contained within a shell of calcium, referred to as a calcified oil cyst.²

Clinical presentation of fat necrosis can range from an incidental benign finding to a lump highly suggestive of malignancy.^{3,4} As the commonest presentation is that of a lump, an underlying malignancy must be considered. Even with a clear history of previous trauma, the possibility of a malignancy should not be overlooked, as patients' attention may only be drawn to the lump by an episode of trauma.⁵

Oil cysts have a pathognomonic mammographic appearance: A lucent center bordered by a smooth, thin, water-density rim. The calcifications tend to be smooth and curvilinear and distributed from the periphery to the center (like an eggshell). Under these circumstances, the mammogram is diagnostic and no further evaluation is necessary.³ Spiculated masses, opaque nodules, or ill-defined increased density may be seen several months after injury when fibrosis pre-dominates. Microcalcifications alone may be present years later,

when the history of trauma is difficult to elicit. Although the changes in echo texture on ultrasound may be chronologically and morphologically consistent with the diagnosis of fat necrosis, one must be wary of sinister pathology obscured by increased density on mammography.

Management of oil cyst includes reassuring the patient about the condition. They are advised short term follow up with clinical examination and imaging. Multiplicity and distribution along the seat-belt line may warrant follow-up rather than a biopsy, particularly in young patients.⁶

CONCLUSION

Oil cysts are a distinctive form of fat necrosis which may be considered as a differential diagnosis in patients presenting with history of trauma induced breast lump with no other associated symptoms. Regular follow up, clinical examination and imaging in such cases can help us distinguish it from a suspected malignancy and may assist us in the decision to monitor a palpable abnormality or perform a biopsy.

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