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Sclerosing adenosis and radial scar of breast :Imaging findings and breast cancer association

M Sakolnurak

D. Boonjunwetwat

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Sclerosing adenosis and radial scar of breast : Imaging findings and breast cancer association

Mutita Sakolnurak*

Darunee Boonjunwetwat*

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Background : *Sclerosing adenosis and radial scar of the breast are benign conditions that may be mistaken for carcinoma on imaging and they are also considered independent risk for breast cancer.*

Objective : *To demonstrate mammographic and ultrasonographic patterns of sclerosing adenosis and radial scar and to determinate the coexisting of both diseases to synchronous breast cancer.*

Material and Methods : *Retrospective analysis of the pathology confirmed 80 sclerosing adenosis foci and 23 radial scar foci was performed. The mammographic and ultrasound features of each focus were analyzed. Coexisting of breast malignancy is also recorded. The result was reported descriptively.*

Results : *- Mammographic findings of sclerosing adenosis are 34 foci (47.22%) of mass, 35 foci (48.61%) of abnormal calcifications, 8 foci (11.11%) of focal distortion, 8 foci (11.11%) of focal asymmetry and no mammographic abnormality in 12 foci (16.67%). Ultrasonographic findings of sclerosing adenosis are 68 foci (86.07%) of mass, 7 foci (8.66%) of calcifications, 7 foci (8.86%) of focal thick duct and no sonographic abnormality in 8 foci (10.13%).*

* Department of Radiology, Faculty of Medicine, Chulalongkorn University and King Chulalongkorn Memorial Hospital

- Mammographic findings of radial scar are 7 foci (30.43%) of mass, 9 foci (39.13%) of abnormal calcifications, 6 foci (26.09%) of focal distortion, 6 foci (26.09%) of focal asymmetry and no mammographic abnormality in 2 foci (8.70%). Ultrasonographic findings of radial scar are 15 foci (68.18%) of mass, 2 foci (9.09%) of calcifications, 1 focus (4.34%) of focal shadowing and 6 foci (27.27%) without sonographic abnormality. Neither mammographic nor sonographic abnormality is seen in one radial scar. Most lesions in our study are categorized as BI-RADS 4 and 5. Coexisting breast cancer with sclerosing adenosis and radial scar are 17.5% and 8.69%, respectively.

Conclusion : *There are varying appearances of sclerosing adenosis and radial scar on mammographic and ultrasound. Both sclerosing adenosis and radial scar are usually categorized as BI-RADS 4 and 5. There is no definite imaging characteristics of which can distinguish them from malignant lesion. Coexisting of breast cancer in these patients is higher than usual screening mammogram.*

Keywords : *Sclerosing adenosis, radial scar, mammographic findings, ultrasound findings, breast cancer.*

Reprint request: Sakolnurak M. Department of Radiology, Faculty of Medicine, Chulalongkorn University, King Chulalongkorn Memorial Hospital, Bangkok 10300, Thailand.
E-mail address : banoffi-pie@hotmail.com

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มุทิตา สกลนุรักษ์, ดรุณี บุญยืนเวทวัฒน์. ลักษณะภาพแมมโมแกรมและอัลตราซาวด์ของ Sclerosing adenosis และ Radial scar ของเต้านม และความสัมพันธ์กับมะเร็งเต้านม. จุฬาลงกรณ์เวชสาร 2554 พ.ย. – ธ.ค.; 55(6): 571 – 86

ความเป็นมา : *Scleroing adenosis และ radial scar ของเต้านมเป็นโรคที่อาจให้ลักษณะภาพรังสีวิทยาคล้ายคลึงกับมะเร็งเต้านม และเพิ่มความเสี่ยงต่อการเกิดมะเร็งเต้านม*

วัตถุประสงค์ : *เพื่อศึกษาถึงลักษณะทางแมมโมแกรมและอัลตราซาวด์ของ sclerosing adenosis และ radial scar ของเต้านม รวมถึงการพบร่วมกันของทั้งสองโรคนี้กับมะเร็งเต้านม*

วิธีการ : *เป็นการศึกษาภาพถ่ายแมมโมแกรมและอัลตราซาวด์เต้านมย้อนหลังในผู้ป่วยที่มีผลทางพยาธิวิทยาวินิจฉัยว่าเป็น sclerosing adenosis ทั้งหมด 80 ตำแหน่ง และ radial scar 23 ตำแหน่ง ร่วมกับบันทึกการเกิดมะเร็งเต้านมร่วมกับสองโรคนี้ สถิติที่ใช้ในการวิจัยเป็นเชิงพรรณนา*

ผลการศึกษา : *- ลักษณะแมมโมแกรมของ sclerosing adenosis พบเป็นก้อน 34 ตำแหน่ง (47.22%), หินปูน 35 ตำแหน่ง (48.61%), การดึงรั้ง 8 ตำแหน่ง (11.11%), ความไม่สมมาตรของเต้านม 8 ตำแหน่ง (11.11%) และไม่พบความผิดปกติ 12 ตำแหน่ง (16.67%). ลักษณะอัลตราซาวด์ของ sclerosing adenosis พบเป็นก้อน 68 ตำแหน่ง (86.07%), หินปูน 7 ตำแหน่ง (8.66%), ลักษณะของท่อที่ดูหนาขึ้น 7 ตำแหน่ง (8.86%)และไม่พบความผิดปกติ 8 ตำแหน่ง (10.13%).*

- ลักษณะแมมโมแกรมของ radial scar พบเป็นก้อน 7 ตำแหน่ง (30.43%), หินปูน 9 ตำแหน่ง (39.13%), การดึงรั้ง 6 ตำแหน่ง (26.09%), ความไม่สมมาตรของเต้านม 6 ตำแหน่ง (26.09%) และไม่พบความผิดปกติ 2 ตำแหน่ง (8.70%) ลักษณะอัลตราซาวด์ของ radial scar พบเป็นก้อน 15 ตำแหน่ง (68.18%), หินปูน 2 ตำแหน่ง (9.09%), เงาเฉพาะที่ 1 ตำแหน่ง (4.34%) และไม่พบความผิดปกติ 6 ตำแหน่ง (27.27%) มี radial scar 1 ตำแหน่งที่ไม่พบความผิดปกติเลยทั้งในแมมโมแกรมและอัลตราซาวด์ โดยส่วนใหญ่ทั้ง sclerosing adenosis และ radial scar จะจัดอยู่ในกลุ่ม 4 และ 5 ตาม BI-RADS category อัตราการพบร่วมกันของ sclerosing adenosis และ radial scar กับมะเร็งเต้านมเท่ากับ 17.5% และ 8.69% ตามลำดับ

สรุปผล : *ลักษณะภาพแมมโมแกรมและอัลตราซาวด์ของทั้ง sclerosing adenosis และ radial scar มีความหลากหลาย โดยส่วนใหญ่จัดอยู่ในกลุ่ม BI-RADS 4 และ 5 ซึ่งไม่สามารถแยกจากมะเร็งเต้านมได้ อัตราการพบมะเร็งเต้านมร่วมกับสองโรคนี้นั้นสูงกว่าที่พบ จากการตรวจคัดกรองมะเร็งเต้านมในคนปกติ*

คำสำคัญ : *Sclerosing adenosis, radial scar, ลักษณะแมมโมแกรม, ลักษณะภาพอัลตราซาวด์, มะเร็งเต้านม.*

Breast cancer is the second most common cancer in Thai women. The estimated incidence rate is 20.5 per 100,000 women.[1] Screening mammography shows protective effect for women between 50 - 69 years of age, with statistically significance of 20 - 35% reduction in mortality from breast cancer.[2]

However, there are about 10.7 percent chance of a false positive result with each mammogram.[2] There are a number of benign conditions that share similar appearances to those seen in primary breast cancer causing diagnostic confusion. Sclerosing adenosis and radial scar of the breast are benign conditions that may be mistaken as carcinoma. Moreover, both sclerosing adenosis and radial scars are also considered as independent risk for breast cancer.[3]

The purpose of this study is to demonstrate mammographic and ultrasonographic patterns of sclerosing adenosis and radial scar and to determine the association of both sclerosing adenosis and radial scar to synchronous breast cancer.

Materials and Method

This retrospective study has been approved by the institutional review board (IRB NO.378/53) of the Faculty of Medicine, Chulalongkorn University.

All patients who were histologically proved sclerosing adenosis and/or radial scar of the breast from January 1, 2004 - June 30, 2009 were recruited into this study. Patients who did not have mammographic and ultrasonographic imaging before tissue diagnosis were excluded from our study. In case of multiple lesions, the lesion that had undergone biopsy and had a final pathological diagnosis was selected.

There were 78 female patients with 80 foci of sclerosing adenosis and 23 female patients each with radial scar focus were selected in this study. All imagings were analyzed under concensus of two radiologists who review the imagings were blinded from the clinical and pathological reports of the patients.

All 72 mammogram imagings of sclerosing adenosis were reviewed from PACS and recorded in details as follows:

1. Site of lesion
2. Shape
3. Margin
4. Radiating spicules
5. Central opacity
6. Microcalcifications
7. Other findings

All 79 ultrasound imagings of sclerosing adenosis were reviewed from PACS and recorded in details as follows:

1. Site of lesion.
2. Shape
3. Orientation
4. Margin
5. Boundary echogenicity
6. Echo pattern
7. Posterior acoustic features
8. Calcifications
9. Vascularity
10. Other findings

All 23 mammogram imagings and 22 ultrasound imagings of radial scar were also reviewed and recorded with same method of sclerosing adenosis.

Assessment BI-RADS category of lesions were performed based on ACR BIRADS mammogram 4th edition[4] and ACR BIRADS ultrasound 1st edition[5] (Table 1, 2). The BIRADS assessment of each lesions was based on combined results of both mammography and ultrasound of breasts. The most worrisome BI-RADS category either from mammography or sonography was selected as the final outcome.

Table 1. Detail of mammographic BI-RADS lexicon.[4]

Category	Description
0 (Need additional imaging evaluation and/or prior mammograms for comparison)	Additional imaging evaluation and/or prior mammograms for comparison are needed.
1 (Negative)	The breasts are symmetric and no masses, architectural distortion or suspicious calcification are presents.
2 (Benign finding(s)	Benign findings. Involuting, calcified fibroadenomas, multiple secretory calcifications, fat-containing lesions such as oil cysts, galactoceles and mixed-density harmartomas all have characteristically benign appearances.
3 (Probable benign finding)	Three specific findings are described as being probably benign (the noncalcified circumscribed solid mass, the focal asymmetry and cluster of round (punctuate) calcifications)
4A (low suspicious for malignancy)	Malignant pathology report not expected and a 6-month or routine follow-up after a benign biopsy or cytology is appropriate. Examples of findings may be a palpable, partially circumscribed solid mass with ultrasound features suggestive of a fibroadenoma, a palpable complicated cyst or probable abscess.
4B (intermediate suspicious of malignancy)	Follow-up with benign result depends on concordance. partially circumscribed, partially indistinctly marginated mass yielding fibroadenoma or fat necrosis is acceptable, but a result of papilloma might warrant excisional biopsy.
4C (moderate concern, but not classic for malignancy)	A A malignant result is expected. Examples of findings are an ill-defined, irregular solid mass or a new cluster of fine pleomorphic calcifications.
5 (Highly suggestive of malignancy)	Findings that are strongly associated with breast cancer, for example in mammograms, a spiculated, irregular high-density mass, a segmental or linear arrangement of fine linear calcifications or an irregular spiculated mass with associated pleomorphic calcifications
6 (Known biopsy-proven malignancy)	This category has been added for breast findings confirmed to be malignant by biopsy *but prior to definitive therapies* such as surgical excision, radiation therapy, chemotherapy or mastectomy

Table 2. Detail of sonographic BI-RADS Lexicon.[5]

Category	Description
0 (Need additional imaging evaluation)	Other examination may be indicated or need for previous studies to determine appropriate management.
1 (Negative)	No abnormality no abnormality, such as a mass, architectural distortion, thickening of the skin or microcalcifications.
2 (Benign finding(s))	Essentially a report that is negative for malignancy such as simple cysts, intramammary lymph nodes, breast implants, stable postsurgical changes and probable fibroadenomas noted to be unchanged onsuccessive US studies.
3 (Probable benign finding)	Should have a less than 2% risk of malignancy such as a solid mass with circumscribed margins, oval shape and horizontal orientation, most likely a fibroadenoma, nonpalpable complicated cysts and clustered microcysts .
4 (Suspicious abnormality, biopsy should be considered)	Intermediate probability of cancer, ranging from 3 to 94 % and require tissue sampling. Included in this group are sonographic findings of a solid mass without all of the criteria for a fibroadenoma and other probably benign lesions.
5 (Highly suggestive of malignancy)	The abnormality identified sonographically and placed in this category should have a 95 percent or higher risk of malignancy.
6 (Known biopsy-proven malignancy)	Reserved for lesions with biopsy proof of malignancy prior to institution of therapy, including neoadjuvant chemotherapy, surgical excision or mastectomy.

Breast malignancy coexisting with sclerosing adenosis or radial scar was also recorded in this study.

Descriptive statistical analysis was used for described imaging features and coexisting breast cancer of sclerosing adenosis and radial scar.

Result

1. Sclerosing adenosis

The mean age of 78 female patients with 80 foci of sclerosing adenosis was 46.8 years (age range, 20 - 71 years). Fifty-one foci (63.75%) are on the left breast and the remaining 29 foci (36.25%) are on the right breast. There are 14 foci of sclerosing adenosis from 13 patients coexisting with breast cancer which was 17.5%.

The mammographic images were available in 72 from 80 sclerosing adenosis foci. The 34 foci (47.22%) shows finding of mass in mammogram. Finding of abnormal calcifications, focal distortion and focal asymmetry are 35 foci (48.61%), 8 foci (11.11%) and 8 foci (11.11%), respectively. No mammographic abnormality is seen in 12 foci (16.67%). The mammographic findings of sclerosing adenosis are described in Table 3.

Table 3. Mammographic findings of sclerosing adenosis.

Mammographic findings	**Number (%)** **n = 72**
Mass	34 (47.22)
- Shape (n = 34)	
Round	15 (41.11)
Irregular	15 (41.11)
Lobular	4 (11.76)
- Margin (n = 34)	
Spiculated	12 (35.29)
Circumscribed	10 (29.41)
Indistinct	5 (14.70)
Obscured	4(11.76)
Lobulated	3 (8.82)
- Radiating spicules (n = 34)	
Long spicules	8 (23.53)
Short spicules	3 (8.82)
- Central opacity (n = 34)	
Homogeneous	25 (73.53)
Nonhomogeneous	7 (20.59)
Absent	1 (2.94)
Calcification	35 (48.61)
Cluster microcalcification	13 (18.05)
Scattered microcalcification	13 (18.05)
Mix micro/ macrocalcification	2 (2.78)
Macrocalcification	4 (5.56)
Pleomorphic calcification	3 (4.17)
Abnormal calcifications without other abnormality	15 (20.83)
Focal distortion	8 (11.11)
With other abnormalities	6 (8.33)
Without other abnormality	2 (2.78)
Focal asymmetry	8 (11.11)
With other abnormalities	4 (5.56)
Without other abnormality	4 (5.56)
Negative finding	12 (16.67)

The sonography was not performed in one focus. Sixty-eight foci (86.07%) show finding of mass on ultrasound. Finding of abnormal calcifications and focal thick duct are 7 foci (8.86%). No sonographic abnormality is seen in 8 foci (10.13%). The sonographic findings of sclerosing adenosis are described in Table 4.

Table 4. Sonographics findings of sclerosing adenosis.

Ultrasound findings	**Number (%) n = 79**
Mass	68 (86.07)
-Shape (n = 68)	
Irregular	31 (45.59)
Oval	21 (30.88)
Round	16 (23.53)
-Orientation (n = 68)	
Parallel	39 (57.35)
Not parallel	29 (42.65)
-Margin (n = 68)	
Circumscribed	20 (29.41)
Spiculated	16 (23.53)
Microlobulated	15 (22.06)
Indistinct	9 (13.24)
Lobulated	7 (10.30)
Angulation	1 (1.47)
-Boundary echogenicity (n = 68)	
Abrupt interface	68 (100.00)
-Echo pattern (n = 68)	
Hypoechoic	57 (83.82)
Isoechoic	1 (1.47)
Complex	10 (14.70)
-Posterior acoustic features (n = 68)	
Enhancement	31 (45.59)
Shadowing	9 (13.23)
No	28 (41.18)
-Vascularity (n = 68)	
No	46 (67.65)
Present in lesion	9 (13.23)
Present immediate adjacent to lesion	11 (16.18)
Diffusely increased in surrounding tissue	2 (2.94)
Calcification	7 (8.86)
Focal thick duct	7 (8.86)
With other abnormalities	4 (5.06)
Without other abnormality	3 (3.80)
Negative finding	8 (10.13)

The sclerosing adenosis were classified as category 3, 4A, 4B, 4C and 5 about 10 foci (12.50%), 28 foci (35.00%), 16 foci (20.00%), 5 foci (6.25%) and 21 foci (26.25%), respectively based on BI-RADS category. (Table 5)

Details of mammographic and sonographic findings of BI-RADS category for these lesions are listed in Table 6.

Example mammographic and sonographic imagings of sclerosing adenosis are as figure 1.

Table 5. BI-RADS category number of sclerosing adenosis.

BI-RADS	Number of lesions (%) n = 80
3	10 (12.50)
4A	28 (35.00)
4B	16 (20.00)
4C	5 (6.25)
5	21 (26.25)

Table 6. Mammographic and sonographic findings of sclerosing adenosis categorized in BI-RADS.

Finding	Numbers of lesions (%)
Mammographic findings (n = 72)	
Mass	31 (43.06)
Negative finding (detected by US)	19 (26.39)
Calcifications	12 (16.67)
Mass with calcification	4 (5.56)
Asymmetrical density	4 (5.56)
Architectural distortion	2 (2.78)
Sonographic findings (n = 79)	
Mass	64 (81.01)
Negative findings (detected by mammography)	8 (10.13)
Mass with calcification	4 (5.06)
Thick duct dilatation	3 (3.80)

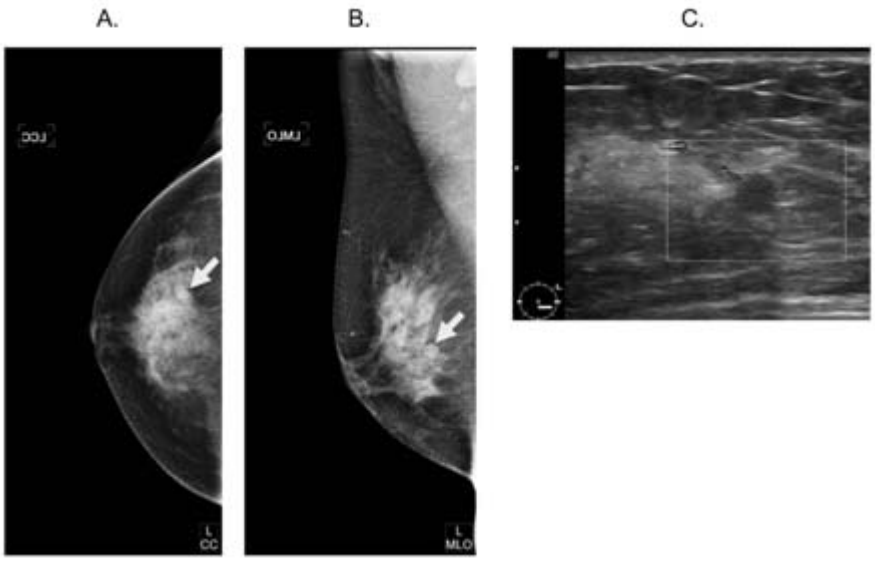

Figure 1. (A) Craniocaudal and (B) mediolateral mammogram of a 47-year-old woman with sclerosing adenosis shows an ill-defined mass (arrow) at left lower outer quadrant. (C) Sonography shows an ill-defined hypoechoic lesion at left lower outer quadrant. This lesion was categorized into BI-RADS 4a.

2. Radial scar

The mean age of the 23 female patients with 23 foci of radial scar is 49.91 years (age range, 27 - 69 years). Seven foci (30.43%) are from the right breast and sixteen foci (69.56%) are from the left. Two foci of radial scars are coexisting with breast cancer which was 8.69%.

All 23 patients received mammographic examination. The 7 foci (30.43%) showed finding of mass in mammogram. Finding of abnormal calcifications, focal distortion and focal asymmetry are 9 foci (39.13%), 6 foci (26.09%) and 6 foci (26.09%), respectively. No mammographic abnormality is seen in 2 foci (8.70%). The mammographic findings of radial scars are described in Table 7.

The sonography was not performed in one radial scar. Fifteen foci (68.18%) show finding of mass on ultrasound. Calcifications are seen in 2 foci (9.09%). One radial scar shows only focal shadowing on ultrasound (4.54%). No sonographic abnormality is seen in 6 foci (27.27%). The sonographic findings of radial scars are described in Table 8.

There is one patient without abnormality in both mammogram and sonography has pathologically confirmed radial scar (tissue pathology is from quandrants sampling in known case of breast cancer with post mastectomy).

The radial scars were classified as category 1, 4A, 4B, 4C and 5 about 1 foci (4.34%), 10 foci (43.48%), 6 foci (26.07%), 3 foci (13.04%) and 3 foci (13.04%), respectively based on BI-RADS category. (Table 9)

Details of mammographic and sonographic findings of BI-RADS category for these lesions are listed in Table 10.

Example mammographic and sonographic imagings of radial scar are as Figure 2.

Table 7. Mammographic findings of radial scar.

Mammographic findings	**Number (%)** **N = 23**
Mass	7 (30.43)
- Shape (n = 7)	
Irregular	6 (85.71)
Round	1 (14.29)
- Margin (n = 7)	
Spiculated	6 (85.71)
Obscured	1 (14.29)
- Radiating spicules (n = 7)	
Long spicules	5 (71.43)
Short spicules	1 (14.29)
- Central opacity (n = 7)	
Absent	3 (42.86)
Homogeneous	3 (42.86)
Nonhomogeneous	1 (14.29)
Calcification	9 (39.13)
Cluster microcalcification	4 (17.39)
Scattered macrocalcification	3 (13.04)
Scattered microcalcification	2 (8.70)
Abnormal calcification without other abnormality.	5 (21.74)
Focal distortion	6 (26.09)
With other abnormalities	3 (13.04)
Without other abnormality	3 (13.04)
Focal asymmetry	6 (26.09)
With other abnormalities	2 (8.69)
Without other abnormality	4 (17.39)
Negative findings	2 (8.70)

Table 8. The sonographic findings of radial scar.

Ultrasound findings	Number (%) N = 22
Mass	15 (68.18)
- Shape (n = 15)	
Irregular	10 (66.67)
Oval	4 (26.67)
Round	1 (6.67)
- Orientation (n = 15)	
Not parallel	10 (66.67)
Parallel	5 (33.33)
- Margin (n = 15)	
Indistinct	6(40.00)
Spiculated	3 (20.00)
Circumscribed	3 (20.00)
Microlobulation	3 (20.00)
- Boundary echogenicity (n = 15)	
Abrupt interface	14 (93.33)
Echogenic halo	1 (6.67)
-Echo pattern (n = 15)	
Hypoechoic	13 (86.67)
Complex	1(6.67)
Isoechoic	1(6.67)
- Posterior acoustic features (n = 15)	
Shadowing	7(46.67)
Enhancement	3 (20.00)
No	5 (33.33)
- Vascularity (n = 15)	
No	8 (53.33)
Present in lesion	1 (6.67)
Present immediate adjacent to lesion	6 (40.00)
Calcification	2 (9.09)
Focal shadowing	1 (4.54)
Negative finding	6 (27.27)

Table 9. BI-RADS category number of radial scars.

BI-RADS	Number of lesions (%) N = 23
1	1 (4.34)
4A	10 (43.48)
4B	6 (26.07)
4C	3 (13.04)
5	3 (13.04)

Table 10. Mammographic and sonographic findings of sclerosing adenosis categorized in BI-RADS.

Finding	Number of lesions (%)
Mammographic findings (n = 23)	
Mass	7 (30.43)
Negative findings (detected by US)	4 (17.39)
Asymmetrical density	4 (17.39)
Architectural distortion	4 (17.39)
Calcifications	3 (13.04)
Calcifications with asymmetrical density	1 (4.35)
Sonographic findings (n = 22)	
Mass	14 (63.64)
Negative findings (detected by mammography)	6 (27.27)
Mass with calcification	1 (4.55)
Focal shadowing	1 (4.55)

Discussion

There are many benign breast lesions that may mimic breast malignancy on breast imagings. Sclerosing adenosis and radial scar are two benign diseases which caused confusion to radiologists on imagings and the final diagnosis always end up with tissue diagnosis.

A study of H. K. Gill *et al*[6] reveals manifested imaging of 33 sclerosing adenosis lesions into circumscribed masses, nonpalpable indistinctly marginated masses and clustered amorphous, pleomorphic, and punctate calcifications.

Few retrospective studies of radial scars imagings[7,8] show several common findings such as substituted of central opacity by radiolucent area and presence of multiple elongated thin spicules radiating from center of the lesion. But most of studies concluded that typical mammographic features

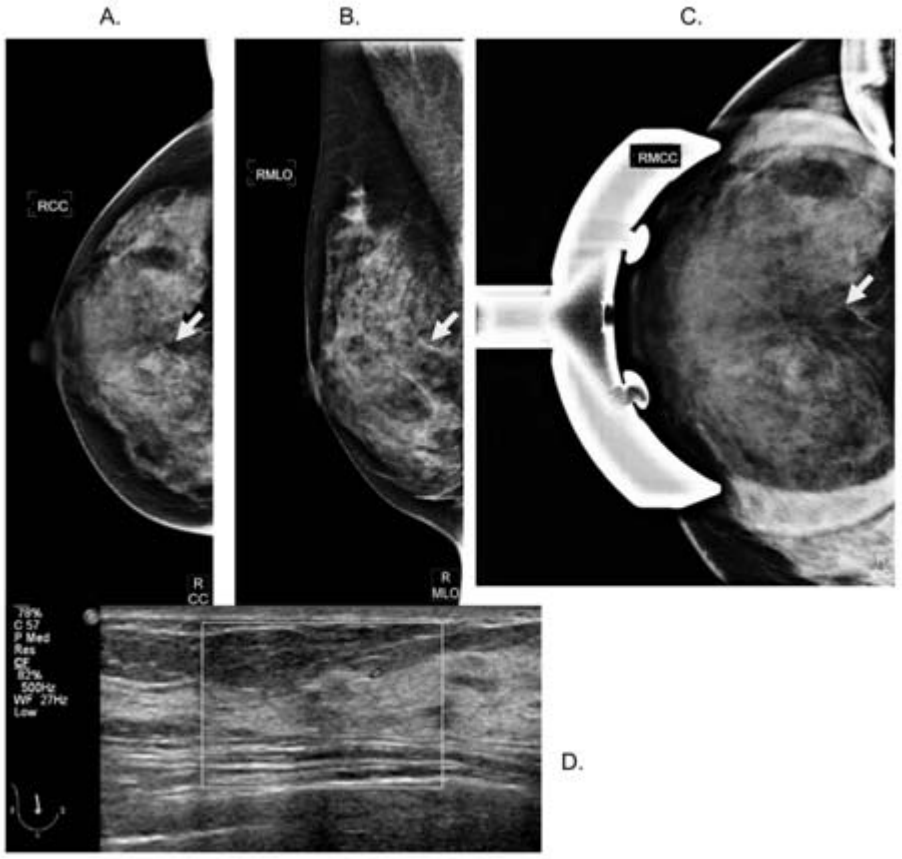

Figure 2. (A) Craniocaudal(CC), (B) mediolateral (MLO) and magnified CC views(C) mammogram of a 51-year-old woman with radial scar shows a spiculated mass with central lucency and focal parenchymal distortion at upper mid part of right breast (white arrow). Sonographic (D) shows an irregular hypoechoic mass with indistinct border and posterior shadowing at upper mid part of right breast (black arrow). The lesion is categorized in BI-RADS 4b.

of radial scar were not specific and should be considered for surgical removal for differentiation from breast cancer.[7-9]

In our study, both sclerosing adenosis and radial scar show varying appearances on both mammogram and ultrasound. Surprisingly, only 6 from 23 lesions (26.08%) of radial scar lesions manifested as spiculated mass and only half of them (3 lesions) showed central lucency which was typical findings from other studies. Most lesions in our study were categorized in BI-RAD 4 and 5, tissue biopsy was needed.

Kerlikowske et al[10] reported average number of cancers detected per first-screening examination was 5 per 1000. Coexisting breast cancer with sclerosing adenosis and radial scar in our study were 17.5% and 8.69%, respectively. The numbers of cancer detected coexisting with sclerosing adenosis and radial scar were higher than normal population from screening mammogram. Also K. Mokbel *et al*[11] reported that the incidence of malignancy associated with radial scars was 31%, suggesting that radial scar might be premalignant lesion.

Jensen RA *et al*[3] reported relative risk for invasive breast cancer among patients with sclerosing adenosis without atypical hyperplasia was 1.7. Radial scar increased risk of breast cancer almost twice risk of women without scar (relative risk 1.8). [12] Both studies concluded that radial scars and sclerosing adenosis were independent risk factors of invasive breast cancer.

Conclusion

There are varying appearances of sclerosing adenosis and radial scar on mammographic and ultrasound. Both sclerosing adenosis and radial scar are usually categorized as BI-RADS 4 and 5. There is no definite imaging characteristics of which can distinguish them from malignant lesion. Coexisting of breast cancer in these patients is higher than usual screening mammogram.

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