Research Article

Architecture distortion in breast cancer screening in Minia University Hospital; analysis and interpretation

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Abstract
Breast cancer has significant importance to public health. There is still no primary treatment of breast cancer, and early detection results tend to be the main priority in the fight against breast cancer. Breast cancers found during screening examinations are more likely to be smaller and still confined to the breast, with better prognosis than those detected late with extensive spread outside the breast tissue.[1] Screening refers to tests and examinations used to detect a disease in people with no symptoms. Early detection means finding a disease before it awaits its symptoms to appear. Unlike breast self-examination and clinical examination, mammogram is the screening test which has been shown to reduce breast cancer mortality rate.[2]
Keywords: breast cancer, Architecture distortion

Introduction

Regular mammograms can detect breast cancer at an early stage, on where more successful treatment is achieved. Based on comprehensive literature review, the ACR currently recommends annual mammographic screening beginning at age 40 for women at average risk for breast cancer. Further consideration in form of earlier and/or more intensive screening is required for women with additional risk factors that position them at higher-than-average risk for developing breast cancer [3]

Aim of the work:

We aimed in this study to assess the results of breast cancer screening

Patients & methods

This study included 2000 asymptomatic female patients older than 40 years old in Minia University children hospital.

Study procedure:

All the 2000 patients had screening mammography and cases with positive findings (190 cases) had been recalled for complementary Ultrasound, 160 had been attended & 30 dropouts

All enrolled Patients were subjected to:

1- Full history taking ; including detailed family history
2- Mammography
3- U/S; for only recalled patients with positive findings (160 of 190 patients)
4- Tissue core biopsy; U/S guided biopsy was performed in selected cases for histo-pathological evaluation of the lesions

Conclusion

Architecture distortion is highly indicated of malignancy, however it could be associated with benign lesions such as fat necrosis and radial scar and reduction mammoplasty.
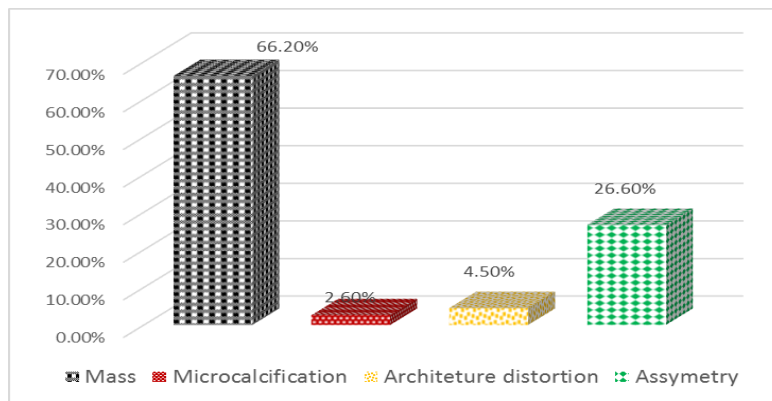
Results
Table (1): Age distribution of the studied patients (N=160)

	Mean ± SD	Minimum	Maximum
Age(years)	52.33±9.01	40	77

Table (2): Relation between family history for breast cancer of the studied cases and final diagnosis (N=160)

	Final diagnosis benign (N=139) N(%)	Final diagnosis malignant (N=21) N(%)	P value
Family history Negative Positive	119 (85.6) 20 (14.4)	13 (61.9) 8 (38.1)	**0.008***

Figure (1): Mammographic findings for type of lesion among the studied cases (N=154)
*There are 6 cases extremely dense breast

Table (3): Relation between mammography findings regarding type of lesion and final diagnosis (N=154)*

Mammography findings	BIRADS N (%)				
	II (N=107)	III (N=23)	IV (N=15)	V (N=9)	P value
Mass	68 (63.6)	22 (95.7)	5 (33.3)	7 (77.8)	**<0.001***
Microcalcification	0	0	4 (26.7)	0	
Architeture distortion	0	0	5 (33.3)	2 (22.2)	
Assymetry	39 (36.4)	1 (4.3)	1 (6.7)	0	

Discussion

We included all asymptomatic women older than 40 years old, the mean of age of recalled cases 52.33±9.01, nearly the same as Huang et al., 2017[4] that had mean age of 52.47±12.88. This is slightly higher than the mean age of the 118 asymptomatic patients by Kumar et al., 2017[5] that had mean age of 49.6 it is may be due to the patients' age at his study ranging from 35-64.

As regarding of personal family history of one of the first degree relative with breast cancer, it was found that 13 of 21 (61.9%) breast cancer cases had positive family history. (P value 0.008), on other words the risk of breast cancer increase in cases with positive family history, in agreement with Brewer et al.,[6], it is a cohort of over 113,000 women from the general UK population, they analyzed breast cancer risk in relation to first-degree family history using a family history score (FHS), that found that risk of breast cancer significantly increase with greater family history.

Among the 2000 patients, 1810 patients had normal mammography and 190 cases had different findings, 30 dropouts and 160 of them had attended; 6 had extremely dense breast (ACR D) and 154 cases had different findings; 102 of 154 (66.2%) cases had masses, 41 cases of 154 (26.6%) had asymmetry, 4 cases of 154 (2.6%) had micro-calcification, 7 cases of 154 (4.5%) cases had architecture distortion, and with no definite mammographic abnormalities. This is in parallel with Zuley, ML et al., 2013[7] that reviewed 217 cases with non calcified lesions by mammography and complementary tomosynthesis retrospectively 84% (182 of 217) of the lesions were masses, 11% (25 of 217) were asymmetries, and 5% (10 of 217) were distortions as the masses was the most common finding at both studies then asymmetry

Architecture distortion was the finding at 7 cases, classified as (BIRADS IV & V) in disagreement with Pujara et al., 2019[8], that conducted DBT in cases with architecture distortion from Jan 2014-Dec 2015, and correlated with US, MRI & pathological correlation, the result was that more than one third of AD cases were malignant and in agreement with Young et al., 2016[9], that found that architecture distortion can represent scale of bening and malignat lesions like radial scar, fat necrosis, reduction mamoplasty, IDC, non calcified DCI & ILC

Conclusion

Architecture distortion has a wide scale of benign and malignat lesions and sometimes it is difficult to distinguish between them radiologically and tru-cut bioposy is the solution for diagnosis.

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