

Breast cancer in the elderly (over 65 years)

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Abstract

Objective: To identify the incidence and imaging pattern of breast cancer in the elderly (over 65) with the aim of identifying guidance relating to breast screening in this age group.

Material and Methods: From our departmental data system, the number of patients who had mammograms between 2009 and 2011 were calculated and the number over 65 were identified. The total number of cancer patients during that period and those over 65 were identified. An analysis of the imaging findings with standard mammographic, ultrasound, MR, CT and bone scans were made. Pathological findings were also reviewed.

Results: Out of 18,482 patients who had mammography, 724 were over 65 making a percentage of 3.9. Out of a total of 523 cancer cases, 59 (11.3%) were over 65 years of age. A pie chart revealed a greater contribution of cancer by this age group. The breast pattern was often involuted making cancer detection easy. Over half the patients with breast cancer who were symptomatic had advanced cancers which were grade 3. Lower grade cancers occurred in various non ductal type of cancers and in the screening population where slow growing tumors were found.

Conclusion: Advanced breast cancer with histologic high grade occurred frequently in the symptomatic elderly women while screen detected cancers were small, easily identified and tend to be low grade. Therefore, the findings support breast screening in the elderly population in order to retain a good quality of life.

Increasing age is a well-known risk factor in breast cancer development. An annual cancer incidence from the US reports that almost one-half of breast cancer in women occurs in women 65 years of age and older [1,2]. On the contrary, a younger age group involvement is reported in the Gulf, where 50% occur in females below 50 years of age [3].

Clinical observation had defined breast cancer as a more indolent disease in the elderly and this has been confirmed by the pattern of tumor biology, which includes higher expression of steroid hormone receptors, lower proliferative indices, absence of expression of epidermal growth factor receptor (EGFR) and HER2 [4-7] in older women.

There are also reports, which indicate that the older women have worse outcome [8] and this has been attributed to both under treatment and an advance disease stage than younger women [5,8-10]. There is also information, which states that increased age was a significant determinant of decreased survival, even among women of stage I or II disease [9]. Although screening would permit early diagnosis in this age group, the impact on mortality is controversial. Therefore, breast screening in this age group is under reported and controversial. Indeed, randomised control data about the effectiveness of mammography screening in older women are absent. Within the same country like the United States, various guide line [11-13] about screening in older women exists.

Although, there is currently no national screening program in most of the Gulf States, breast screening does occur in some section of the population. Amidst the controversy of screening in the elderly and limited information about the pattern of breast cancer in our elderly population, this study therefore aims at identifying

- The percentage of breast cancer detected in our practice in the over 65 years.
- The imaging pattern.
- Some guidance for screening in the elderly.

Materials and Method

The Data System from the breast imaging and intervention system of our department was used. The number of breast cancer patients diagnosed between 2007 to 2011 were recorded. The number of patients, who were over 65 years, was identified.

The number of patients, who had mammograms between September 2007 and 2011 were calculated and the number of over 65 years were identified.

An analysis of the imaging findings with standard mammographic, ultrasound MR, CT and Bone Scans were reviewed. All breast cancer cases are usually discussed in our regular multidisciplinary meetings. Patients who had breast cancer diagnosed and treated elsewhere before coming to us were excluded. Special ethical consent of this study is not needed due to the retrospective nature of the study.

A detailed analysis of the breast cancer cases with age above 65 years at presentation were made. Symptomatic and screen detected cancer were identified.

Imaging: All patients had the usual four views mammography. Additional views including axillary areas, exaggerated craniocaudal views and magnification with compression views were obtained when necessary. The mammograms were obtained with a Lorad MS (Hologic Selenia) equipment. The findings were classified according to the BI-RADS Lexicon [14]. Recorded information includes extent of the disease i.e. multifocal within the same segment, multicentric involvement of different segments, extension to the skin, bilaterality and axillary lymphnodes. Microcalcification and dystrophic calcification were also noted.

Ultrasound Imaging: This was performed with an Ultra 9 Philips Medical system with 12-5 MHz Linear Array Transducer. Real time gray-scale and Doppler Images were obtained. The images were interpreted by experienced radiologists using the BI-RADS Classification [14]. The size of masses was measured when possible. The disease was assessed as to the extent of involvement, unifocality, multifocality or bilaterality.

MR Imaging: Patients were examined in a prone position with breasts hanging freely in a dedicated breast coil. A 3T (Philips Equipment) was used. The usual departmental protocol including STIR, T₂ and T₁ weighted images were obtained in axial views. T₁ weighted three-dimensional (3D) with fat suppressed gradient echo with low flip angle. Pre-contrast images were obtained followed by 3 sequential images after bolus contrast injection of 2 mmol per kilogram body weight of magnevist (Schering Berlin Company). Subtraction views and Maximum Intensity Phase (MIPS) were obtained.

Areas of abnormal enhancement were depicted in the subtraction view and highlighted in the MIPS. Kinetic study was done in the dynamic sequence. Areas of abnormal enhancement were analyzed according to mass, non-mass, linear ductal and asymmetric pattern. The findings were rated according to the BI-RADS Lexicon [14].

Follow-up of patients who received neoadjuvant chemotherapy were performed with Ultrasound, Mammography or MRI. Staging CT of the chest abdomen and pelvis as well as Radio Isotope Bone Scan were performed in all patients with stage 2 and more disease. The standard TNM system is used.

Pathological analysis was performed by our dedicated breast pathologist. Major findings include tumor size, type, excision margins, grade and hormone receptor status as well as HER2/nev and tumor stage. Patients with secondary cancer were also recorded.

Results

The total number of patients examined mammographically over the study period was 18,482. The number of patients over 65 was 724 making a percentage of 3.9%. The total number of cancer diagnosed was 523 out of which 59 (11.3%) were over 65 years. Table 1 pie chart reveals a greater contribution of cancer by this age group in relation to the number of patients examined.

Imaging Presentation: The age range was 66 to 103 years. The oldest patient with cancer was 95 years. Out of the 724 patients, 578 (80%) were symptomatic

and out of these cases 53 cancers were found. 146 (20%) cases were for screening and out of these 6 cancers were detected.

The breast pattern in these patients was fatty involuted or fibrofatty and that made cancer detection in both symptomatic and screening cases easy and categorized as BI-RAD 5 readily. This includes ultrasound evaluations in all and in 3 cases where MR was done.

Table 2 shows the cancer population, advanced cases, multicentricity and bilaterality and tumor pathological grade. Two thirds of the cancers in the symptomatic group were advanced. These have cancer of over 4cm and or skin involvement with diffuse breast edema and replaced axillary lymphnodes better seen in ultrasound. 12 patients had metastatic disease at presentation. Grade 3 tumors were common in the advance group. In the screening population, the tumor size were small and under 1 cm. None had metastatic disease and the tumor grade was 1 or 2. An interesting pathologic finding was the variation of tumor type apart from invasive ductal carcinoma.

Nine (15%) of the 59 cases were due to non-ductal carcinomas. These include papillary, mucinous, medullary, tubular and lobular tumors were found in this group.

Secondary cancers identified with the CT evaluation were 2 uterine cancers, 2 ovarian cancers and 1 colonic cancer. These are of different pathologic origin. One of the cases with uterine cancer had a screen detected breast cancer.

Table 1: Showing the contribution of cancer by the elderly population in relation to the number examined.

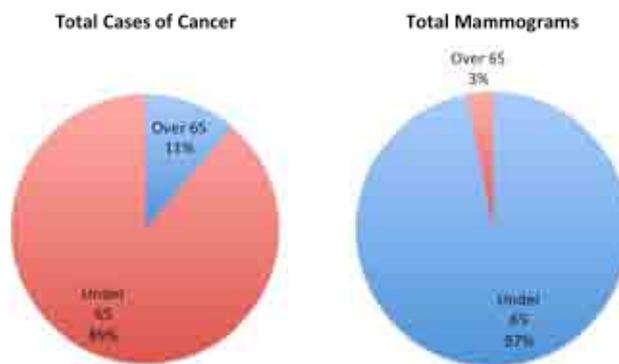


Table 2: Showing the cancer pattern in the 59 cases identified.

Cancer population	Advanced skin changes over 4cm	Multicentric Bilateral	Metastatic	Pathological grade
Symptomatic 53	39 (66% Of total)	4 Multi 2 Bilateral	12	32- Grade 3 18- Grade 2 3- Grade 1
Screening 6	Nil (Size 3-8mm Cancer)	Nil	Nil	4- Grade 1 2- Grade 2

grade 3= 54% (N=32), grade 2= 34% (N=20), grade 1= 12% (N=7)

Nine of the symptomatic group have passed away including 3with secondary cancers while all those from the screening population including the one with secondary cancer are still alive.

Discussion

The study reveals that a disproportionate incidence of cancer occurred in the over 65 years examined mammographically as shown in the pie chart. Although the pattern supports the fact that increasing age is a risk factor in breast cancer, the incidence of 11 percent in this age group is far below the incidence in the United States, where almost one-half of breast cancers arise in women 65 years of age or older [1&2].

The relative high incidence of cancer in this age group in the studied population could be related to the fact that about 80 percent were symptomatic and they presented with palpable or obvious masses and with advanced disease in over half of the cases. These findings support earlier report of advance presentation in this age group [5].

Also 54% of the cancers were histologically grade 3 cancers. This appears contrary to the clinical general belief that breast cancer in the elderly are of low grade since over one-half in this study are not low grade cancer. However, in the screening population, the cancers discovered were small and well under 1 cm and of low grade (fig.1). These were also easy to identify mammographically due to fatty transparent nature of the breast. The ease of identification of these cancers and the expected ease of management of these cases who are currently all alive support encouragement of screening in this population particularly if they are relatively in good health. Notably nine of the symptomatic group have passed away and are directly related to breast cancer.

Also, since the screen detected cancers were small and of low grade, it is difficult not to speculate that the advanced metastatic cancers in the symptomatic probably cases started as low grade small cancers. This would again support screening in the elderly, who are in good health.

Other interesting findings were the variety of cancers identified in this age group. Eleven out of 59 had non-ductal cancers e.g. papillary, medullary, tubular, mucinous, squamous and lobular (fig. 2& 3). These cancers tend to be of low grade.

This study suffers the limitation of retrospective study. The incidence of the various age groups is not included for comparison. Also a discussion of the management is not included since it is outside the scope of the study and comorbidities such as diabetes mellitus and hypertension are not mentioned. However, five secondary cancers were identified in this age group making a percentage of secondary cancer of 9%. Also, the screen detected cancers are few due to the small number screened.

In summary

The study shows two major patterns of presentation of breast cancer in the over 65. The symptomatic patients often present with advanced grade 3-breast cancer while the screened population reveals small low-grade cancers. Identification of these cancers in both groups is easy at imaging due to the involuted breast pattern.

These findings encourage breast screening in the health elderly population to retain a good quality of life.

Figures

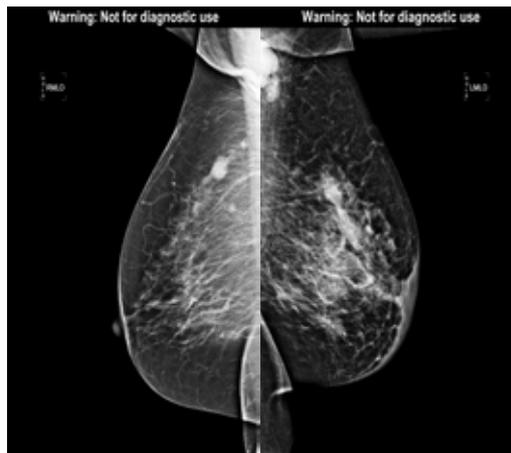


Fig 1: Mixed fibroglandular breast in a 74 year old. The density at the right axillary tail was unchanged in size for 3 years. Minimal haziness at the 4th year dictated biopsy. Grade I ductal ca was found at pathology.

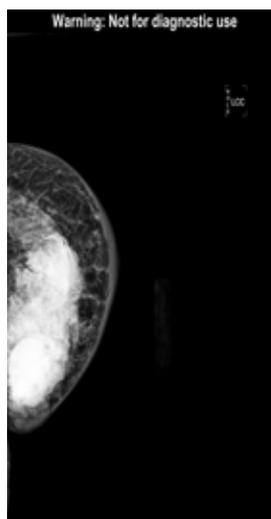


Fig 2: Advanced total left breast ca in a 78 year old. Pathology reveals solid papillary ca grade III.

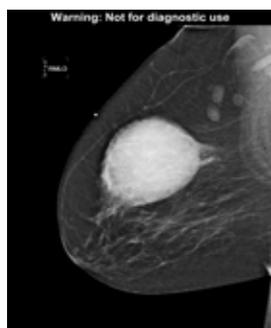


Fig 3a: Rt. breast mammography [MLO view] Circumscribed homogenous mass overlying a fatty involuted breast centrally.



Fig 3b: Ultrasound showed a large complex cystic lesion with minimal wall thickening. Pathology revealed squamous cell malignancy grade II. Benign large simple cyst are uncommon in the old.

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