

IS IT NECESSARY TO EXCISE ALL BREAST LESIONS? EXPERIENCE FROM A UNIVERSITY-BASED BREAST UNIT

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ABSTRACT

Background: Breast cancer is becoming more important in Asia since it affect the younger age group. Question arises whether it is safe for breast lesions to be left in-situ if all the elements in triple assessment are benign. The aim of this study is to audit all the excision biopsies of breast lumps done in the University Malaya Medical Centre (UMMC), to review the association of age with the type of pathological finding and to evaluate the rate of carcinoma in these biopsies.

Methods: We conducted a retrospective study of all women who had excision biopsy of a breast lump in the University Malaya Medical Centre from January 2005 to December 2006. All patients with malignant preoperative biopsies were excluded.

Results: Of 717 lesions in 664 patients, 459 (64%) were fibroadenoma, 114 (15.9%) were fibrocystic disease, 20 (2.8%) were phylloides tumour, 27 (3.8%) were papilloma, 59 (8.2%) were malignant and 38 (5.3%) were of other pathology. Of the 717 open biopsies, 449 (62.6%) had fine-needle aspiration cytology (FNAC), 31 (4.3%) had core needle biopsy (CNB), while 14 (2.0%) had both FNAC and CNB done prior to excision biopsy. 251 (35%) had neither FNAC nor CNB. The incidence of fibroadenoma decreased with increasing age and the incidence of fibrocystic changes and papilloma increased with increasing age. There was no association of age with phylloides tumour. The incidence of unexpected malignancy increased with increasing age. The incidence rates were 0.3%, 4.5%, 19.4%, 29.7% and 29.6% for the age group below 30, 30-39, 40-49, 50-59 and above 60 years of age respectively. Of the 59 malignant lesions, FNAC was performed on 47 (79.7%) and CNB on 16 (27.1%). 9 had both FNAC and CNB and 3 had neither FNAC nor CNB. Out of the 56 lesions where FNAC/CNB were done, 23 (41.1%) were reported as benign, 20 (35.7%) as suspicious, 4 (7.1%) as atypical, 5 (8.9%) as inadequate, 2 (3.6%) as equivocal and 2 (3.6%) as lymphoid lesions. Out of the 23 prior biopsies reported as benign, 22 were in the age group above 40.

Conclusions: In conclusion, the rate of unexpected malignancy in open biopsies increases with age. It is recommended that all women above the age of 40 presenting with a palpable breast lump or a suspicious non-palpable abnormality on screening mammogram to have their lump excised even though the lump is benign on FNAC or CNB. However, women age of 30 to 39 should also have the lump excised in the presence of other risk factors such as family history of breast cancer.

Key-words: Breast lump, excision biopsy, breast cancer, FNAC, health care service.

Ng CH, Taib NA, Yip CH. Is it necessary to excise all breast lesions? Experience from a university-based breast unit. *Malaysian Family Physician*. 2009;4(2&3):66-70

INTRODUCTION

Although open biopsy has been considered the gold standard in establishing or ruling out carcinoma of the breast,¹ it is common practice for women under 30 years of age who have palpable breast lumps to be managed conservatively provided that there are no suspicious features in triple assessment, i.e. clinically, radiologically and on cytology.² It is also recognised that impalpable breast masses thought to be benign on screening can be left in situ provided that the triple assessment indicates so. It should therefore, be acceptable to conservatively manage women with palpable or impalpable breast lumps in the

screening group namely those above 40 years old when all elements in the triple assessment are benign. Management of these lesions is a compromise between not subjecting patients to unnecessary invasive procedures and ensuring prompt diagnosis and treatment of malignancies. Some institutions adopted a similar conservative approach provided the fine needle aspiration cytology (FNAC) or core needle biopsy (CNB) yielded benign cells on two separate occasion.² The size of the lesions should be monitored by imaging at a prescribed interval of 6, 12, 24 and 36 months interval to ensure that the lesions remain the same size or decrease in size. If the size increases, then it will mandate an excision biopsy as there is no 'safe' range of growth

although Gordon *et al*³ reported an acceptable mean change of 20% at a 6 month interval for fibroadenoma. Triple assessment has been reported to have a specificity and positive predictive value of 100%, a sensitivity of 95.5% and concordance of 98.8% if all three modalities were in agreement for a diagnosis of either benign or malignant disease.⁴ A lack of concordance certainly mandates biopsy although Donegan⁵ in his review article has recommended for virtually all palpable masses to be surgically biopsied. In Asia, the incidence of breast cancer is increasing and may occur in a relatively younger age group.⁶ Up to 25% of breast cancer occurs in younger patients in developing Asian countries as compared to developed Asian or western countries.⁷ The National Cancer Registry of Malaysia reported that 13.4% of patients were younger than 40 years of age⁶ as compared to 7.4% of American patients, 29.3% of Taiwanese patients, 12.6% of patients in Singapore, and 8% of Australian patients.⁷ The prevalent age group is between 40 to 49 years of age, accounting for 33.6% of the cases. The peak incidence is in the age group of 50 to 59 years with 159.8 per 100,000 women.^{6,7} As the prevalence of breast cancer occurs in the younger group is this part of the world, is it safe for breast lesions to be left in-situ if all elements in the triple assessment are benign. There is currently no published data addressing the above question. Therefore, in this study, we retrospectively audited all the excision biopsies done in University Malaya Medical Centre (UMMC) and evaluate the rate of carcinoma in these biopsies.

METHODS

Patients who underwent lumpectomy, wide local excision, microdochectomy or hook-wire localisation excision biopsy of a breast lump in University Malaya Medical Centre from January 2005 to December 2006 identified from the theatre surgical log were included in the analysis. Exclusion criteria included a diagnosis through frozen section during operation, confirmed diagnosis of breast carcinoma and excision of any recurrence. Any procedures which have axillary dissection or clearance were also excluded. Patients, who underwent excision of more than one lump, were considered as separate biopsies. A total of 664 patients with 717 open biopsies were identified and analysed. The previous FNAC or CNB and the final pathology report of the specimen excised were obtained from the hospital pathology computerised system. All patients were then sub-divided into five age groups depending on their age at the date of operation. They were below 30 years of age, between 30 to 39, 40 to 49, 50 to 59 and those above 60 years old. The pathological reports were then grouped into six broader categories for the analysis. Fibroadenoma includes fibroadenoma, fibroadenomatoid mastopathy and tubular adenoma.

Fibrocystic changes include fibrocystic disease, fibrosis, fibroadenosis, sclerosing adenosis, cysts, duct ectasia, atypical ductal hyperplasia (ADH), fibroproliferative disease, and ductal hyperplasia. Papilloma includes papillary adenoma, papillomatosis, intraductal papillomatosis, ductal papillomatosis, ductal adenoma and intraductal papilloma. Malignant includes infiltrating ductal carcinoma, ductal carcinoma in-situ (DCIS), invasive cribriform carcinoma, adenocarcinoma, medullary carcinoma, adenoid cystic carcinoma, lymphoma and metastatic neuroendocrine tumour. No evidence of malignancy, granulomatous mastitis, adenomyoepithelioma, intra-mammary reactive lymph node, lymphangioma, mesenchymal lesion, foreign body giant cell reaction were all grouped into "others".

Statistical analysis

A classification table for the five age groups in relation to the final histology was drawn up from the 717 excision biopsies. Chi-square test for linear trend was performed using Epi-Info Version 6 to study the trend of rising age with prevalence of malignancy, fibroadenoma, fibrocystic changes, papilloma and phylloides tumour. All significance testing were two tailed and p value equal or less than 0.05 is considered significant.

RESULTS

A total of 664 patients were included in the study, of which 52 had lesions in both breasts and one patient with 2 lesions in the right breast with two different pathological results. In total, 717 breast lesions were removed. Of the 717 open biopsies, 449 (62.6%) had fine-needle aspiration cytology (FNAC) and 31 (4.3%) had core needle biopsy (CNB) while 14 (2.0%) had both FNAC and CNB and 251 (35%) had neither FNAC nor CNB pre-operatively.

Out of the 717 biopsies, 459 (64%) were fibroadenoma, 114 (15.9%) were fibrocystic disease, 20 (2.8%) were phylloides, 27 (3.8%) were papilloma, 59 (8.2%) were malignant and 38 (5.3%) were of other pathology. When all patients were sub-divided into five age groups, there were 381 (53.1%) biopsies in those below 30 years of age, 111 (15.5%) in the age group of 30 to 39 years of age, 134 (18.7%) in the age group of 40 to 49 years of age, 64 (8.9%) in the age group of 50 to 59 years of age and 27 (3.8%) in those above 60 years old. There was a statistically significant association between type of histology with age group ($p < 0.001$). The incidence of fibroadenoma decreased with increasing age ($p < 0.001$) and the reverse was true for fibrocystic changes ($p < 0.001$). There was also an association of papilloma with increasing age ($p < 0.001$). However, there was no statistically significant association for phylloides tumour with increasing age ($p > 0.01$). (Table 1)

Table 1. Age groups and histological types

	Below 30	30-39	40-49	50-59	Above 60	Total
Fibroadenoma	333(72.5%) [87.4%]	66 (14.4%) [59.5%]	50 (10.9%) [37.3%]	7 (1.5%) [10.9%]	3 (0.7%) [11.1%]	459(100%) [64.0%]
Fibrocystic changes	27 (23.7%) [7.1%]	25 (21.9%) [22.5%]	36(31.6%) [26.9%]	18(15.8%) [28.1%]	8 (7.0%) [29.6%]	114(100%) [15.9%]
Phylloides	6 (30.0%) [1.6%]	4 (20.0%) [3.6%]	3 (15.0%) [2.2%]	6 (30.0%) [9.4%]	1 (5.0%) [3.7%]	20 (100%) [2.8%]
Papilloma	2 (7.4%) [0.5%]	4 (14.8%) [3.6%]	13 (48.1%) [9.7%]	4 (14.8%) [6.2%]	4 (14.8%) [14.8%]	27 (100%) [3.8%]
Others	12 (31.6%) [3.1%]	7 (18.4%) [6.3%]	6 (15.8%) [4.5%]	10(26.3%) [15.6%]	3 (7.9%) [11.1%]	38 (100%) [5.3%]
Malignant	1 (1.7%) [0.3%]	5 (8.5%) [4.5%]	26 (44.1%) [19.4%]	19(32.2%) [29.7%]	8 (13.6%) [29.6%]	59 (100%) [8.2%]
Total	381(53.1%) [100%]	111(15.5%) [100%]	134(18.7%) [100%]	64 (8.9%) [100%]	27 (3.8%) [100%]	717(100%) [100%]

Note: percentages within round brackets are row percents, percentages within square brackets are column percents

Table 2. Prior FNAC/CNB of the malignant lesions

FNAC/CNB	Inadequate	Benign	Lymphoid	Atypical	Suspicious	Equivocal
N=56	5 (8.9%)	23 (41.1%)	2 (3.6%)	4 (7.1%)	20 (35.7%)	2 (3.6%)

The overall incidence of unexpected malignancy was 8.2%. The incidence was only 0.3% (1/381) in those below age of 30 and 4.5% (5/111) in those between the ages of 30 to 39. In the age group of 40 to 49, the incidence of malignancy increased to 19.4% (26/134). The incidence of malignancy in patients 50 to 59 of age were 29.7% (19/64) and 29.6% (8/27) in those above 60 years of age (Table 1). Within the malignant group, 1.7% (1/59) was from the age group below 30, 8.5% (5/59) from age group 30-39, 44.1% (26/59) from those in the age group of 40 to 49, 32.2% (19/59) from the age group of 50 to 59 and 13.6% (8/59) from those in the age group above 60 years of age. There was also a statistically significant association between rising age and the prevalence of malignancy ($p < 0.001$). 56 out of 59 lesions had FNAC and/or CNB. Out of the 56 lesions, 23 (41.1%) were reported as benign, 20 (35.7%) as suspicious, 4 (7.1%) as atypical, 5 (8.9%) as inadequate, 2 (3.6%) as equivocal and 2 (3.6%) as lymphoid lesions (Table 2). Out of the 23 biopsies reported as benign, 22 out of 23 were in the age group above 40. Table 3 shows the final histopathological types of the 59 unexpected malignant lesions.

Table 3. Final histopathology of the malignant biopsies

Final histology	No	Percentage
Adenocarcinoma	1	1.7
Adenoid cystic carcinoma	1	1.7
DCIS	14	23.7
DCIS with invasive component	6	10.2
Infiltrating ductal carcinoma (IDC)	25	42.4
IDC with DCIS	3	5.1
Invasive cribriform	1	1.7
Mixed IDC G3/cribriform	2	3.4
Medullary carcinoma	1	1.7
Metastatic neuroendocrine mets	2	3.4
Non-Hodgkin's lymphoma	2	3.4
Diffuse large B-cell lymphoma	1	1.7

DISCUSSION

Many studies have found that breast lumps in those below 30 years old can be left alone provided all the three elements of triple assessment showed benignity.^{2,8-11} Studies carried out in younger women to find out whether they prefer to be managed conservatively show conflicting results.⁸⁻¹¹ Cant *et al*⁸ found that only 25% of 99 women chose non-operative management despite being reassured that it is safe to do so and a further quarter of these subsequently requested excision. In contrary, studies by Dixon *et al*^{10, 11} showed that 90% of women under the age of 40 opted to be treated conservatively. This does not seem to be true in our institution setting. In UMMC, the choice of excision biopsy lies with the patient although it is a policy that all breast lumps in those above the age of 40 will be excised if patient agreed.

In this study, it was found that most open biopsies were done in the younger age group with the mean age of 32.6 years old and more than half of them were in the age group of below 30 years old where 87.4% of the histology showed fibroadenoma as a final diagnosis. The incidence of fibroadenoma in those above 30 years old in this study was 27.5%. There are probably a few reasons for the above. Firstly, many women are not comfortable with a breast lump even though assured that it is benign with a diagnostic accuracy rate of almost 100% and opted removal for "peace of mind". Secondly, the financial issue. In a managed care environment, patients do not bear the financial responsibility for treatment; less invasive procedures will be cost saving financially and socially by eliminating the need for open biopsy. However, it must be recognised that cytological and imaging procedures with frequent clinical follow-up may actually increase the total costs.

Although current practice in the management of breast lump is to ascertain a preoperative diagnosis, only about two-third of the patients had either FNAC or CNB done before the breast lump was excised in UMMC. This probably can be due to a few factors. Firstly, it might be a cost factor. The cost of FNAC in our institution is RM65 (USD 20) as compared to only RM100 (USD 25) for excision biopsy done in day care. Secondly, a significant proportion of patients wish to have the lump removed without any initial cytological diagnosis. Thirdly, the breast clinic protocol in our institution, advises that in patients over 40 years old, all lumps should be excised if the patient is agreeable. The decision to obtain FNAC or CNB depends on the age of the women as the rate of biopsies increases with increasing age in this study.

The main finding from this study is that overall unpredicted malignancy rate was less than ten percent but the rate of malignancy detected increased with age especially in those

above the age of 40 years old, and in these cases, FNAC and/or CNB failed to detect carcinoma. It is well known that as the patients' age increases, benign breast problems become less frequent. Therefore, abnormalities found on clinical examination in women over the age of 40 years should be considered malignant until proven otherwise. There were three reasons why a malignant lesion might provide a benign or indeterminate result. Firstly, a sampling error may occur when sampling a relatively large lesion. Borderline pathological changes are often seen at the edge of DCIS or invasive carcinomas, and if the centre of the lesion is not sampled the diagnosis will be missed. Secondly, the interpretation can be limited by the relatively small sample size in CNB or a cluster of cells in FNAC. This may cause difficulty in assessing the nature of epithelial proliferation, such as differentiating ADH from low grade DCIS. Thirdly, the lesion, although essentially benign, may have an association with carcinoma, such as radial scars. Watson *et al*² concluded in their study that not all palpable solid lumps in women over 50 are malignant and it may be appropriate for surgeons in the symptomatic breast clinic to manage some older women with palpable breast masses expectantly following full and careful investigation and thus reduce their benign biopsy rates. However, in view of the high incidence of unpredicted malignancy, therefore, all breast lumps in women aged 40 and above should be removed even though the cytological result shows otherwise. The other reason is that a quarter of incidence of breast cancer in Asia occurs mainly in younger age group as compared to western countries. In Malaysia, about 15% of breast cancer occurs in those younger than 40 years old. Hence we should be more aggressive in excising all lumps in those women aged between 30 to 39 years old.

CONCLUSION AND RECOMMENDATION

The rate of unexpected malignancy in open biopsies increases with age. It is recommended that all women above the age of 40 presenting with a palpable breast lump or a suspicious non-palpable abnormality on screening mammogram to have their lump excised even though the lump is suspected to be benign by FNAC or CNB. However, women between the ages of 30 to 39 should also have the lump excised in the presence of other risk factors such as a family history of breast cancer.

REFERENCES

1. Seltzer MH. Preoperative prediction of open breast biopsy results. *Cancer*. 1997;79(9):1822-7
2. Watson G, Given-Wilson R. Probably benign palpable lumps in women over 50 - is surgery the only option. *The Breast*. 1999;8:48-50

3. Gordon PB, Gagnon FA, Lanzkowsky L. Solid breast masses diagnosed as fibroadenoma at fine-needle aspiration biopsy: acceptable rates of growth at long-term follow-up. *Radiology*. 2003;229(1):233-8
4. Steinberg JL, Trudeau ME, Ryder DE, *et al*. Combined fine-needle aspiration, physical examination and mammography in the diagnosis of palpable breast masses: their relation to outcome for women with primary breast cancer. *Can J Surg*. 1996;39(4):302-311
5. Donegan WL. Evaluation of a palpable breast mass. *N Engl J Med*. 1992;327(13):937-42
6. Yip CH, Taib NA, Mohamed I. Epidemiology of breast cancer in Malaysia. *Asian Pac J Cancer Prev*. 2006;7(3):369-74
7. Agarwal G, Pradeep PV, Aggarwal V, *et al*. Spectrum of breast cancer in Asian women. *World J Surg*. 2007;31(5):1031-40
8. Cant PJ, Madden MV, Coleman MG, *et al*. Non-operative management of breast masses diagnosed as fibroadenoma. *Br J Surg*. 1995;82(6):792-4
9. Cant PJ, Madden MV, Close PM, *et al*. Case for conservative management of selected fibro-adenomas of the breast. *Br J Surg*. 1987;74(9):857-9
10. Dixon JM, Dobie V, Lamb J, *et al*. Assessment of the acceptability of conservative management of fibroadenoma of the breast. *Br J Surg*. 1996;83(2):264-5
11. Dixon JM, Clarke PJ, Crucioli V, *et al*. Reduction of the surgical excision rate in benign breast disease using fine needle aspiration cytology with immediate reporting. *Br J Surg*. 1987;74(11):1014-6

Research Digest

1.6% of breast cancers occurred in males in UKM Medical Centre

Ngoo KS, Rohaizak M, Naqiyah I, Shahrin Niza AS. Male breast cancer: experience from a Malaysian tertiary centre. *Singapore Med J*. 2009;50(5):519-21.

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During the five-year period from 2003 to 2007, out of 375 patients with breast cancer, six were male patients. Most of the male breast cancer patients presented with a painless breast lump. There was a substantial delay in presentation (median 13.5 months, range 2-36 months).

High selenium intake protects against breast cancer

Suzana S, Cham BG, Ahmad RG, *et al*. Relationship between selenium and breast cancer: a case-control study in the Klang Valley. *Singapore Med J*. 2009;50(3):265-9.

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In this case control study (64 cases and 127 controls), higher selenium dietary intake and higher selenium content in toenails are associated with lower breast cancer risk.