THE AGA KHAN UNIVERSITY

eCommons@AKU

Department of Surgery

July 1996

Needle localization of non-palpable breast lesions

S Khan
Aga Khan University

N Mitha

F Kazi

M Siddiqui

Follow this and additional works at: https://ecommons.aku.edu/pakistan_fhs_mc_surg_surg

Part of the Surgery Commons

Recommended Citation

Needle Localization of Non Palpable Breast Lesions

Shaista Khan, Midhat Siddiqui (Department of Surgery, The Aga Khan University Hospital, Karachi.)
Naheed Mitha (Resident Pathology, Hennepin County Medical Centre, Minneepolis, MN, CT.)
Farhana Kazi (Resident Internal Medicine, University of Connecticut, Farmington, CT.)

Abstract

Screening mammograph.y identifies suspicious, non palpable mammary lesions. Mammographic needle localization (MNL) is currently being used to facilitate excision biopsy of these lesions. Thirty-two patients underwent biopsies of the breast after MNL for non-palpable lesions. Mammographic indications for biopsy consisted of microcalcifications (48%), mass or abnormal density (21%) or mass+abnormal density (24%). The carcinoma was identified in four cases (12%). Two of these were in situ, one was microinvasive and one was frankly invasive. Three were treated with a modified radical mastectomy. One of these non palpable lesion demonstrated nodal metastasis but none showed distant metastasis. All radiologically detected abnormalities were removed and confirmed with repeat radiology. No complications were identified. MNL effectively localizes non- palpable lesion of the breast and compliments accurate diagnosis and treatment of early carcinoma of the breast (JPMA 46: 149, 1996).

Introduction

Carcinoma of the breast diagnosed at screening mammography has been shown to have a better overall prognosis than those diagnosed by physical examination only[1,2]. In 1973 non-palpable carcinoma of the breast were shown to be associated with a survival rate superior to that of palpable carcinoma of the breast and a lower rate of axillary metastasis[3]. Improved overall stir'ival of women with mammographically detected early carcinoma of the breast has reappraised mammography and its use in early detection[1-3].

However, biopsy of occult lesions was cumbersome and highly inaccurate. Non-invasive methods of localization such as skin marking or blind biopsy without an attempt at pre-operative localization were often unsuccessful. Likewise invasive methods using water soluble mentgenographic contrast agents or vital dyes largely proved to be unsatisfactory because of rapid dispersion into tissues. Early attempts at needle localization using heavy gauge wires was unsuccessful.

In 1976 the use of single fine hooked wire mammographic localization was first repoited. This technique with minor modification has superseded other forms of localization and has allowed accurate biopsy of virtually any non-palpable lesion in the breast[4]. We report a retrospective review of' our experience with needle localization biopsy of 33 marnmographically detected abnormalities in 32 women undergoing mammography for screening or for symptomatic disease.

Patients and Methods

Case reports of all patients undergoing excision biopsy of breast lesions between January 1989 to Februaiy 1992 were retrospectively reviewed. Patients with a single non-palpable maminographic abnormality consisting of either a mass, an abnormal parenchymal density or microcalcification deemed suspicious for a carcinoma by a radiologist, were considered for mammographic needle localization and biopsy. Needle hooked wire biopsies were performed upon on an out-patient basis under general anaesthesia. The following data was reviewed: Age, risk factors, indications for

mammography biopsy, mentgenographic findings of mammography, result of the specimen radiology, histological diagnosis and complications of the procedure. For patients with carcinoma nodal status, estrogen receptor status and the final treatment modalities were also reviewed.

Lesions were re-identified on a pre-op mediolateral mammogram. The abnormality was localized with a Kopans needle, repeat craniocaudal and mediolateral films were used to confirm satisfactory position of the needle. A fine self-retaining stainless steel hooked wire was then inserted through the needle. The introducing needle was withdrawn, while the wire existing through the skin of the breast was carefully secured to prevent dislodgement. The patient with accompanying mammogram was transported to the operating room for open biopsy. A cylinder of mammary tissue guided by the hooked wire was excised. Excised lesions specially containing microcalcifications were subjected to specimen radiology to ensure complete excision. Permanent histological sections were prepared on all specimens from biopsy and formed the basis for final diagnosis.

Treatment strategy was planned taking into consideration the indication of biopsy, histological finding, evaluation of remainder of breast tissue and the patients own perception of treatment risks and outcome.

Results

Thirty three consecutive needle localization biopsies were performed upon 32 women during a three year penod. Patients ranged in age from 28 to 73 years (Mean 47.5 years). Mean age at menarche was 12.9 years. Six patients (18.2%) had a positive family histoiy in first degree relatives of malignant breast diseases.

Fifteen of the patients were postmenopausal (45.5%) and 18 were premenopausal (54.5%). Seven patients were nulliparous (2 1.2%). Average age at first delivery was 24.7 years. Five patients had received prior hormonal treatment (oral contraceptives) and none of them had previous breast irradiation. Ten patients (30.3%) had disease in the opposite breast out of which five were benign and five were malignant. These five patients were previously diagnosed to have malignant lumps in the contralatera breast and were treated with mastectomy and/or adjuvant therapy. None of the four patients with malignant disease in the present series, had malignant disease in the contralateral breast. Except for two patients (6. 1%) who hadahistoiy offibroids, none of them had any other neoplastic lesion. Jndications for mammography are represented in Table I.

Table I. Indications for mammography in 32 patients with occult breast lesions.

	All patients	Cancer patients
Screening	12 (34%)	2 (6%)
Symptomatic	21 (64%)	2 (6%)
lump	9 (43%)	-
pain	5 (24%)	-
pain and lump	3 (14%)	1 (5%)
nodularity	2 (10%)	-
nipple discharge	2 (10%)	1 (5%)
Total	33	4

Table II. Mammographic findings of 33 lesions in 32 patients.

Radiological abnormality	All patients	Cancer patients
Clustered microcalcification	13 (39%)	2 (6%)
Density/Mass	8 (24%)	-
Both	9 (27%)	2 (6%)
Dispersed microcalcification	3 (9%)	-
Total	33	4

Table II summarizes the radiological indications for biopsy. Specimen radiology was performed upon all patients, 90.9% of the specimen radiology confirmed the presence of the original lesion. In remaining biopsies excisions were completed with further excision.
Benign disease was found in 29 (87.87%) patients and malignancy was demonstrated in 4 (12.12%). The most common benign lesion was fibrocystic disease without epithelial proliferation. The histological characteristics of benign and malignant lesion are summarized in Table III.

Table III. Histological outcome of 33 lesions in 32 patients.

Benign	29
Fibrocystic disease	16
Fibrosclerosis	4
Duct ectasia	3
Papillomatosis	3
Fibroadenoma	1
Sclerosing adenosis	1
Malignant	4
infiltrating ductal carcinoma	3
intraductal carcinoma	1

Comparison of the mammographic findings with the histological findings in the ipsilateral breast revealed that micro calcification alone accounted for 50% of malignant lesions, whereas both microcalcification and density accounted for 50% of malignant and 17.24% of the benign lesions. Nodal involvement was subsequently assessed in all four patients with malignant breast lesion and was found to be negative in three patients. No patient had evidence of distant metastasis on further studies. All four were positive for estrogen receptors (50% were intermediately positive and 50% strongly positive). Treatment options were discussed with the patients. One patient previously treated for malignant lesion with breast conservation was advised modified radical mastectomy. Two patients opted for modified radical mastectomy, whereas one patient preferred simple mastectomy. Two patients were offered further hormonal treatment. One patient with positive lymph nodes received chemotherapy (Table IV).

Table IV. Results on patients with malignant occult lesions (n=4).

Age	Histology	Staging	Estrogen Receptors	Treatment	Outcome
28	Intraductal/ focal infiltrating	Stage I	Strong +ve	MRM+Hormonal	Alive and well (15 months)
42	Infiltrating	Stage II	Strong +ve	MRM+ chemotherapy	Alive and well (14 months)
54	Intraductal	Stage I	Intermediate +ve	Simple mastectomy	Alive and well (31 months)
73	Infiltrating	Stage I	Intermediate +ve	MRM+Hormonal	Alive and well (13 months)

MRM = Modified radical mastectomy

Cost analysis for mammography, needle guided biopsy, histological evaluation, anesthesia and operating room cost as well as the fees of the surgeon wascarried out. The cost of the average combined procedure performed under local anesthesia was not significantly different from that under general anesthesia. All costs were calculated with the procedure performed on an out- patient basis.

Discussion

"Any form of local treatment must depend on its success primarily on early diagnosis" Keynes 1932[1]. Awareness that an improved prognosis is linked with early breast carcinoma has advocated an aggressive attitude towards early identification and treatment of this malignancy[3]. Considerable experience and data obtained from large scale screening programmes, reveals that many patients will demonstrate mammographic abnormalities without a clinically palpable mass[4]. A significant percentage of these may prove tobe a carcinoma. Mammographic predictor of malignant disease is not sufficiently sensitive or specific to be relied on to confirm carcinoma. Tissue diagnosis remains the gold standard. Blind biopsies of non-palpable lesions of the breast was previously performed with considerable difficulty, inaccuracy and disfigurement to the patient. Likewise, the use of vital dyes and roentgenographic contrast was similarly unsatisfactory.

The results of published studies have shown that 7 to 33% of patients undergoingMNL are found to have "minimal" carcinoma of the breast[4-12]. Given the proportion of patients studied with non invasive carcinoma of the breast with predominantly node negative stage, our experience is comparable and acceptable with results of other workers. A generally accepted benign to malignant ratio for biopsies performed on the basis of clinical findings alone is variable 3:1, 9:1. A benign to malignant ratio of 2-4:1 reflects accurate radiologic criteria for biopsy without a plethora of unnecessaiy biopsies for suspicious mammographic findings[13-15]. Ciatto et al reported abenignto malignant ratio that ranged from 2.4:1 to 7.3:1[14] Choucair et al[16] found complete agreement in only 16% of 103 mammographic abnormalities.

The ideal benign to malignant ratio has not been established[17,18]. We obtained a B:M ratio of 7.25:1. Five patients were found to have severe fibrocystic changes on biopsy described,as epithelial hyperplasia with atypia. Although such a pathological diagnosis is classified as benign a recent consensus opinion places the risk of developing carcinoma of the breast with this lesion as five times that of the normal population[4]. This group of women once identified should benefit from more intensive follow-up.

Documentation of satisfactory excision of the localized abnormality is of paramount importance. This is usually accomplished with specimen radiology. Microcalcification are generally easily detected by specimen radiology and thus provide an excellent indicator of adequate excision[4]. In this study specimen radiology was used in all the patients. The presence of either microcalcification ormasses was confirmed in 90.9% of the specimen.

Progress in roentgenographic techniques and development and refinement of MNL for clinically occult lesions of the breast has led to an increased percentage of positive findings from biopsy and a greater uniformity of technique amongst investigators. For effective outcome MNL requires timely coordination between the radiologists, surgeons and pathologists. With proper planning the exercise can be carried out efficiently on an out-patient basis and at a reasonable cost.

MNL was introduced in Pakistan at the Aga Khan University Hospital in January, 1989. Most of the patients attending the breast clinic in AKUH are symptomatic with a palpable abnormality with a small number attending for screening purposes only. These two reasons explain our small study population of33 needle localization over three years.

References

1. Dowlethshahi, M.D., Peter, M.m Jokich, F. et al. A prospective study of double diagnosis of non palpable lesion of the breast. Surg. Gynecol. Obstet., 1991;172:121-124.

2. Shapiro, S., Determining the efficacy of breast carcinoma screening. Cancer, 1989;63:1873-1880.

3. Aitken, R.J and Chetty, U. Non palpable mammographic abnormalities. JR. Coll. Surg. Edinb., 1991 ;36:362-371.

4. john, A., Donald, S., Ross, M.D. et al. Mammographic wire localization in diagnosis and treatment of occult carcinoma of the breast. Surg. Gynecol. Obstet., 1989;168:239-243.

5. Baker, L.H., Chin, T.D. and Wagner, Ky. Progress in screening for early breast carcinoma. J. Surg. Oncol., 1985;30:96-102.

6. Schwartz, OF., Feiz, BA., Rosenberg, AL. et al. Staging and treatment of clinically occult breast carcinoma. Cancer, 1984;53: 1379-1384.

7. Bigilowr, R., Smith, R. and Goodman, P. Needle localization of non palpable breast masses. Arch. Surg., 1985; 120:565-568.

8. Hall, W.C., Aust, J.B., Gark, H.V. et al. Evaluation ofnon palpablebreast lesions. Am. J. Surg., 1986;151:467-469.

9. Poole, 0. V., Chopini, RH., Sterchi, J. M. et al. Occult lesions ofthe breast. Surg. Gynceol, Obstet., 1986;163:107-110.

10. Lange, NP., Talbert, G.E., Shewmake, KB. et al. The current evaluation of non palpable breast lesions. Arch. Surg., 1987;122:1389-1391.

11. Tinnemans, J.G., Wobbles, T.H., Holland, R. et al, Mammographic and histopathologic correlation ofnon palpablelesions ofthebreast and thereliablity of frozen section diagnosis. Surg Gynecol., Obstet., 1987:165;523-529.

12. Silver-Stein, Mi., Gamagani, P., Rosser, R.J. et al. Hooked wire directed breast biopsy with overpenetrated mammography. Cancer, 1987;59:715-722.

13. Gregory, M., Phillip, C.J McClure, H.H. et al. Non palpable carcinoma needle localized biopsy for diagnosis and considerations for treatment. Am. J. Surg., 1986;51:599-602.

14. Annel, R. Gordon, F.S., Stephen, A. et al. Clinically occult breast lesions, localization and significance. Radiology, 1987; 162:167-170.

15. Stefano, C., Luigi, C. and Vito, D. Non palpable lesions detected with mammography: Review of 512 consecutive cases Radiology, 1987:165;199-202.

16. Moskovic, E., Sinnet, H.D. and Parsons. CA. The accuracy of mammographic diagnosis in surgically occult breast lesions, Clin. Radiol., 1990;41:344-346.

17. Choucair, R.J., Holcombs, MB., Mathews,R. et al. Biopsy of non palpable breast lesions. Am. J. Surg., 1988;156;453-456.

18. Jeffrey, L.C., Sigurd, B., Adolf, L. ct al. Needle localization and biopsy of non palpable lesions of the breast. Surg. gynecol. Obstet., 1987;164;399-403.

19. Wilhan, C., Hall, W.C.. Aust, J.B. ct al. Evaluation ofnon palpablebreast lesions. Am. ,l. sung., 1986;151;467-68.