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Management of fibroadenoma of the breast

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Abstract

Background: Fibroadenoma is a common cause of discrete breast lumps in young women. There is agreement that fibroadenomas can be diagnosed preoperatively with a high degree of confidence and that some of the lesions thus diagnosed will resolve, possibly obviating the need for excision. There is, however, wide disagreement over the proposition of fibroadenomas that resolve spontaneously and therefore the benefit that accrues from an expectant policy.

Objectives: This study aimed to audit the management of fibroadenoma on one unit and clarify their natural history over a 3 years period.

Methods: A cohort of one hundred women with 115 fibroadenomas diagnosed using a triple assessment of clinical examination, cytology and imaging (sonomammography) have been followed for a minimum of 3 years.

Results: In all, 81 of the fibroadenomas have been excised. In four cases the histology revealed benign disease other than fibroadenoma; there were no neoplasms. The sensitivity of cytology and sonomammography for the diagnosis of fibroadenoma were 84% and 98% respectively. Thirty-four fibroadenomas have not been excised. Of 25 fibroadenomas that have been reassessed after at least 3 years of follow-up, 13 (52%) have reduced in size, 4 (16%) are unchanged in size and 8 (32%) have grown. No patient has developed a carcinoma at the site of presumed fibroadenoma.

Conclusion: This study confirms that an expectant management policy of fibroadenomas has not resulted in misdiagnosis of carcinomas. Further, since a significant proportion of fibroadenomas remain static or reduce in size over a 3 years period many women can avoid excision.

Keywords: breast, fibroadenoma, disease

Introduction

Fibroadenoma is the most benign breast tumor in female adolescents and women younger than 30 years old. Although they can occur in postmenopausal women receiving estrogen replacement therapy [1]. Juvenile fibroadenomas are a subtype that occurs in adolescents and young adults and are characterized by more cellular histology and rapid growth. These lesions are not known to carry any higher risk of malignancy. Despite their name, the most common tumor in juveniles is still the common fibroadenoma [2]. In an older patient, the fibroadenomas occasionally undergo necrosis with subsequent, generally coarse calcification and can be recognized as large dense clumps on a radiomammogram [3]. Fibroadenomas are usually unilateral (90%) and the masses frequently occur in the upper outer quadrant [4]. Unlike women with a single fibroadenoma, most of the patients with multiple fibroadenomas have been shown to have a strong family history of these tumors [5]. Fibroadenomas usually stop growing at a size of 2-3 cm, except those associated with hormonal stimulation. Lesions larger than 5 cm diameter or more than 500 grams are considered giant fibroadenomas, but are more common in young females, the exact aetiology of giant fibroadenomas is unknown [6]. Usually only one or two occur in an apatient but bilateral lesions and even up to four in a single patient are not uncommon [7]. Fibroadenomas arise from a breast lobule rather than a single cell and show hormone dependency, participating in lactation and involution at menopause, this may explain the high incidence of fibroadenomas in young women at the time of maximal lobular development [8]. The clinical diagnosis of fibroadenomas is apparently straightforward given a discrete, smooth, mobile, non-tender breast lump [9]. The management of fibroadenoma is still debatable and dependent on patient age and clinical findings. For non-palpable lesions the recommended approach is a follow-up period of 1-3 years after the fibroadenoma is diagnosed by the triple assessment [10]. For palpable lesions, some advocate complete surgical excision of all lesions that are clinically

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suspected of being fibroadenomas, as it provides a definitive diagnosis while removing the lesion as a source of patient concern. It also alleviates the need for short term follow up often of fibroadenomas using the triple assessment which includes a clinical breast examination, imaging studies (mammography, ultrasound or both) and biopsy many women can be offered choices of expectant management rather than immediate excision [11]. This study follows prospectively a group of women with a breast lump deemed to be a fibroadenoma using a triple assessment of examination, breast imaging and cytology. Some lesions were excised, permitting the accuracy of diagnosis to be judged. Others were managed expectantly, allowing insight into the natural history of these lesions.

Materials and methods

Women presenting to the breast clinic in Alkansasa hospital in the period January 2018 to December 2020 with a discrete breast lump that was clinically thought to be a fibroadenoma were entered into the study. The diagnosis was confirmed using cytology and breast imaging. Those breast lumps that were not typical of fibroadenoma on these assessments were excluded from the study. Excision biopsy was advised in women of 30 years and older and was also performed in younger women if, despite reassurance that the lump in their breast was innocent in nature, they wanted the lesion removed. Those women who did not have immediate excision biopsy were followed for 2 years by 3-monthly clinical examination and 6-monthly breast imaging. Biopsy was performed at the request of the patient or if the lump was increasing in size. Those patients who still had a breast lump at the end of the 2-year period have now been reviewed (conservative group). The size of the breast lump was assessed both clinically and by breast imaging. The

sonomammograms of all patients have been reassessed by one observer (CR) and the size of the lesions seen measured to the nearest millimetre.

Results

There were 100 women included in this study. The fibroadenomas were multiple in 15 (15%) of women and a total of 115 fibroadenomas has been studied. The mean age of the women was 28 years (range 15-48 years) and 69% were under 30 years of age at entry into the study. The fibroadenomas were found slightly more frequently in the right breast (54%) than the left. Most were in the upper half of the breast (82%) and, overall, 50% were in the upper outer quadrants.

Surgery group:- In all, 81 fibroadenomas in 60 patients have been excised. The mean age of this subgroup was 28.3 years and 60% were under 30 years of age. The mean size of the lesion in this group was 13 mm (range 5-20mm). The result of the diagnostic tests used are shown in table 1. It is apparent that both cytology and sonomammography were used in the majority of patients. The indication for excision of the breast lump was age >30 years in 15, patient wishes in 21 and increasing size in four. The findings on histology are shown in Table 2. There were four lesions incorrectly diagnosed preoperatively as fibroadenomas; all errors have occurred in women over 30 years of age and none were carcinomas. The woman who had an area of histologically normal breast tissue removed has recently had a normal sonomammogram. The data in Table 1 and Table 2 allow the sensitivity of cytology and sonomammography for the diagnosis of histologically confirmed fibroadenoma to be calculated. The sensitivity of cytology was 84% (88% excluding the unsatisfactory specimens) and that of.

Table 1: Diagnostic tests used and results obtained Test

Results	Cytology	Mamography	Ultrasound
Surgery group			
Fibroadenoma	60	6	77
Bening	6	3	1
Unusual/atypical	2	1	1
Unsatisfactory	3		
None	10	43	2
Conservative group			
Fibroadenoma	23	4	32
Bening	1	2	1
Unsatisfactory	4		
None	6		1

sonomammography was 98%. The positive predictive value of a cytology result indicating fibroadenoma was 95% and for sonomammography 94%. Nine patients were followed for 1-3 years before having their fibroadenoma excised. The lesion decreased in size in two patients, was of stable size in three and increased in size in four.

Conservative group:- Thirty-four fibroadenomas in 30 women have been followed for a period of 3 years. The mean age of this group of women is slightly younger at 26.6 years than that of the study group as a whole or of those having excision, and a higher proportion (80%) were under 30 years of age. The method of securing the diagnosis is illustrated in the lower half of Table 1. Of the 34 fibroadenomas, four were lost to follow-up; 25 have

been followed clinically and by ultrasound for at least 3 years. In all, 13 (52%) have reduced in size (mean 8 mm, range 1-15mm) of which eight have resolved entirely, 4 (16%) were the same size at the beginning and end of the study and 8 (32%) have increased in size (mean 5 mm, range 2-12mm). The other five patients were lost to follow-up after 18 to 24 months; two lesions had reduced in size (by 8 mm and 1 mm), two were unchanged in size and one had increased in size by 2 mm. The mean sonomammographic size of all lesions not excised was 12 mm (range 5-22mm). Of the lesions smaller than the mean, the average change in size was a reduction of 3.5 mm and one-half of the lesions resolved completely. Among the 16 larger lesions, the mean change in size was a reduction by 1.4 mm, with only one resolving completely.

Table 2: Correlation between the results of preoperative investigation and final histology in those lesion that were excised

Histology	No of lesion	Cytology	Mammogram	Ultrasound
Fibroadenoma	70	38	6	72
Fibroadenosis	7	Fibroadenoma Unsatisfactory	Not done	Not done
Papilloma	2	Unusual fibroadenoma	Bening	Fibroadenoma
Normal tissue	2	Fibroadenoma	Fibrosis	Fibroadenoma

Discussion

Fibroadenoma is a common cause of discrete breast lumps in young women, with a peak age of incidence of 20-30 years (2). Fibroadenomas occur with similar frequency in either breast and are situated most often in the upper outer quadrant [3]. Multiple fibroadenomas were found in 15% of women in this study, a similar proportion to that noted previously [2, 4]. It is probably more appropriate to consider a fibro-adenoma to be an aberration of normal breast development [5] rather than a benign neoplasm. Fibroadenomas arise from a breast lobule rather than a single cell and show hormone dependency, participating in lactation and involution at menopause [1]. Fibroadenomas do not undergo malignant change. Those cancers that are reported in fibroadenomas are thought to be chance occurrences, and have tended to occur in women of 40 years and over [1, 6]. Considering fibroadenoma to be at one end of the spectrum of normal breast tissue rather than as a disease entity gives encouragement to a policy of non-surgical management. The clinical diagnosis of fibroadenoma is apparently straightforward given a discrete, smooth, mobile, nontender breast lump. However, this assessment is confirmed on histology in only one-half to two-thirds of cases [4, 7, 8]. The majority of errors resolve to be other forms of benign breast disease [4] but, more significantly, some clinical fibroadenomas are found to be carcinomas. The risk of a clinical fibroadenoma being a neoplasm is of the order of 5% and most of these in women over 35 years of age [4, 7, 8]. The diagnostic accuracy can be improved by the addition of cytology, which will detect most of the neoplasms [7]. An inadequate cytology sample does not exclude a carcinoma and would not support conservative therapy [4]. The use of breast imaging, usually sonomammography in this age group, has a high sensitivity for the diagnosis of fibroadenoma [9] and this has been confirmed in this study. A high degree of accuracy is particularly relevant if a selective conservative policy is to be adopted. In this study of those lesions thought to be fibroadenomas preoperatively, histology differed in 11 (7.5%) and no carcinomas were misdiagnosed. The natural history of fibroadenomas remains uncertain. Studies are difficult to interpret, since one can never be certain that a breast lesion that has regressed was in fact initially a fibroadenoma. The rate of resolution of a breast lump indicated by clinical and cytological assessment to be a fibroadenoma over a period of 1-3 years has been reported as between 16% and 37% [2, 8-10]. Over a follow-up period of over 3 years, 32% of fibroadenomas in this study have resolved, with resolution being more frequent in those lesions < 12 mm in diameter at presentation. In the study with the lowest rate of resolution, which was also that conducted over the shortest follow-up period [8], only 40% of the lesions that resolve had cytology entirely consistent with a fibroadenoma. The high positive predictive values of cytology (95%) and ultrasound (94%) found in the first part of the study indicate that the majority of the lesions that have resolved are likely to have been fibroadenomas. Between 30% and 40% of fibroadenomas that do not resolve completely in short-term studies, do reduce in size or remain stable [2, 8]; the higher figure accords with the findings of the present study. There is an even wider range of estimates for fibroadenomas that increase in size (0-53%) [2, 8, 9].

In this study one-third of non-excised lesions increased in size and increasing size was the indication for operation in a further four patients. The reduction in size of the majority of fibroadenomas in the short term is consistent with the view that they tend to regress after the menopause. Fibroadenomas in older women are of lower cellularity and smaller than in the young [3, 11, 12] and fibroadenomas are rare in mastectomy specimens [11]. The risk of a clinical fibroadenoma being a neoplasm is virtually confined to women over 35 years of age and this has been advocated as a cut-off age below which fibroadenomas can be treated expectantly [3, 8, 10]. Others have more conservatively advised a cut-off age of 25 years, calculating that there is a 1:229 risk of missing a carcinoma above this age given the sensitivity of the triple assessment for the diagnosis of cancer in young women [7]. However, these authors ignore the fact that only 30% of carcinomas in young women clinically simulate a fibroadenoma [13] and therefore the risk is more likely to be about 1:700. The younger the cutoff age, the fewer patients will be eligible for conservative therapy. In this study the age of 30 years has been used, representing a compromise between the arguments expressed above. This allows about two-thirds of women with a fibroadenoma to be considered for expectant management. Our data indicate that of these women nearly one-half will nevertheless opt for excision. Other authors have indicated that an even higher proportion of women would opt for surgery [2]. With a confident diagnosis of fibroadenoma using the triple assessment of examination, cytology and breast imaging, many women can be offered a choice of expectant management rather than immediate excision. For women under 30 years of age this does not expose them to a significant risk of missed cancer. We now discharge such women from clinic after 6 months and advise them to re-attend only if they think the lesion has increased in size or is causing other anxiety. This study suggests that over a 3-years follow-up period, two-thirds of these lesions will remain stable in size or get smaller. There is therefore a substantial chance that surgery will ultimately be avoided, with obvious savings for both the patient and the health service.

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