THE COMMON CLINICAL PRESENTATIONS AND HISTOPATHOLOGICAL PATTERNS OF FIBROCYSTIC CHANGES OF THE BREAST IN SUDANESE PATIENTS

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ABSTRACT

Background:
Fibrocystic change of the breast is a common condition. Roughly 50% of women seeking evaluation for breast lumps have fibrocystic change. It mimics carcinoma clinically, radiologically, grossly and in its microscopic appearance, specially the proliferative type of the disease which has an increased risk for malignancy.

Design:
This is a laboratory based retrospective study.

Setting:
This study was carried out in Sudan- Khartoum State Laboratory Administration, department of histopathology, and National Public Health Laboratory during the period between January-2010 and December-2011.

Objectives:
To study the clinicopathological patterns of fibrocystic change in the study area from January 2010 to December 2011, correlating age and sex incidence.
Materials and Methods:

Histological sections of 130 biopsies from formalin fixed and paraffin embedded blocks were obtained and stained with H&E. The slides were thereafter examined by the authors under the light microscope to determine the histopathological pattern. The clinical information was obtained from the request forms in the records of the laboratory.

Results:

Of the 130 breast lesions histologically reviewed, it has been found that Fibrocystic change of breast is predominantly a disease of female (128 cases [98.5%]) with only 2 cases (1.5%) in males. The age range of patients with fibrocystic change was 15 – 65 years. About (31.5%) of patients lie between (15-25) years, (28.64%) were between (26-35) years, while only 3.85% of patients lie between 56-65 years. Of the biopsies studied breast mass was the common presenting symptom found in 122 patients (93.8%). In relation to site, left site involved in 38 patients (29.2%), right breast in 33 patients (25.4%), bilateral involvement in 7 patients (5.4%) while in 44 patients (33.8%) the site was undetermined. Regarding the type of biopsies 111 (85.4%) were excisional biopsies. Considering the histopathological patterns of the disease fibrosis was found in (97.7%) of patients, cyst in (96.9%), adenosis in (92.3%), apocrine metaplasia in (34.6%) of patients, epithelial hyperplasia in (42.6%) of patients, papillomatosis in (11.5%), sclerosing adenosis in (10%) of patients, chronic inflammation in (79.2%), while only (5.4%) of patients had calcification. Incidence of apocrine metaplasia among different age groups revealed that 17 patients (majority of patients) lie between 15 – 25 years while only 3 patients lie between 56 – 65 years. Forty one patients with non proliferative fibrocystic change their age lie between 15 – 25 years and only 5 cases were between 56 - 65 years of age. In patients with proliferative fibrocystic change 15 of them (majority) lie between 15 – 25, while only 3 cases between 56 – 65 years. Eight patients (25%) with epithelial hyperplasia lie between the ages 15 – 25 years while only 3 patients (9.4%) were between 56 – 65 years of age.

Conclusion:

In spite of being a disease of females 2 cases of fibrocystic like change in male sex were found in my study. The disease commonly affects younger age and incidence decrease with an increase in age in both proliferative and non-proliferative type of the disease. Apocrine metaplasia is found in 34.6% of cases and peak between 2nd and 3rd decade. Breast mass is the common presentation affecting predominantly the left side. Most of biopsies are excisional. Fibrosis, adenosis and cysts are the common histopathological pattern encountered in non proliferative type while epithelial hyperplasia is the dominant pattern in the proliferative type of the disease.

Key words: Fibrocystic, Breast, Sudan

Introduction:

Fibrocystic disease of the breast is an extremely important lesion because of its high frequency the ability of some of its subtypes to simulate the clinical, radiographic, gross, and microscopic appearance of carcinoma and the possible relationship of some of its forms to carcinoma. Many other names have been proposed over the years for this disorder, none of which is entirely satisfactory, and some of which are highly objectionable: cystic disease, cystic mastopathy, cystic hyperplasia, mammary dysplasia, Reclus disease, Schimmelbusch disease, mazoplasia, chronic cystic mastitis, benign breast disease, and others. There are certainly many ‘changes’ in this ‘condition’, but the constellation of these changes clearly fulfills the criteria for a ‘disease’. Figures regarding fibrocystic breast disease occurrence are significant for treatment considerations and for determining which women with fibrocystic breast disease are at increased risk for breast cancer. Current predictions are that, while only 1 of 11 women will develop breast cancer, 25% of all women will see their health-care providers because of breast lumps.
or other abnormalities. Careful examination would show that at least 50% of all reproductive-age women have palpably irregular fibrocystic breast disease that accounts for 70% of benign breast diseases and are the most common lesion found in premenopausal women.\(^{2}\) From 50% to 75% of all breast biopsies are done because of clinical diagnoses of fibrocystic breast disease. Lesions are found histologically in about 35% of the cases, and malignancy coexists in about 25% of the specimens.\(^{3,4}\) Histological evaluation of the surgical specimens and family history predict cancer risk and influence treatment. A possible relationship between fibrocystic disease and breast carcinoma has been suggested over the years on the basis of the following evidence:

1. The time-honored observation that breasts excised for carcinoma usually also exhibit changes of fibrocystic disease\(^{6}\) and that this fibrocystic disease seems to have a greater degree of epithelial proliferation than the one found in a population without carcinoma.\(^{7}\)

2. The fact that retrospectively studied breast biopsies in patients who subsequently developed invasive carcinoma often show very florid and even atypical proliferative changes rather than the usual pattern of fibrocystic disease.\(^{8,9}\)

3. The parallelism in the incidence of breast carcinoma and benign proliferative breast lesions in the various populations,\(^{5}\) including the fact that kindreds susceptible to breast carcinoma also inherit a predisposition to proliferative breast disease.\(^{10}\)

4. The presence of karyotypic and molecular alterations in benign proliferative breast lesions that parallel to some extent those of breast carcinoma.\(^{11,12,13,14,15}\)

5. The claim that patients with fibrocystic disease treated conservatively and subjected to long-term follow-up are found to develop invasive carcinoma at a higher rate than a control population.\(^{16}\) To the extent of our knowledge no similar study conducted in Sudan. The objectives of current study is to determine the clinicopathological patterns of fibrocystic change of the breast in Sudanese patients in the study area from January 2010 to December 2011, correlating age and sex incidence.

**MATERIAL AND METHODS:**

This is a laboratory based retrospective study. The subjects for the study are histopathology specimens presented to Sudan- Khartoum State Laboratory Administration and National Public Health Laboratory between 2010 and 2011 and diagnosed as fibrocystic change of the breast. Data collected from the patients records. All cases without clinical request form or missed histopathology blocks were excluded. Histological sections of 130 cases from formalin fixed and paraffin embedded blocks were obtained and stained with H&E. The slides were thereafter examined microscopically by the authors and the histopathological pattern of the slide determined. The collected data analyzed by SPSS analytical system and the laboratory director consent was taken.

**Results:**

Of the 130 breast lesions histologically reviewed, it has been found that Fibrocystic change of breast is predominantly a disease of female (128 case [98.5%]) with only 2 cases (1.5%) in males. The age range of patients with fibrocystic change was 15 – 65 years. About (31.5%) of patients lie between (15-25) years, (28.64%) were between (26-35) years, while only 3.85 % of patients lie between 56-65 years. Of the biopsies studied breast mass was the common presenting symptom found in 122 patients (93.8%). In relation to site left site involved in 38 patients(29.2%) , right breast in 33 patients (25.4%) , bilateral involvement in 7 patients (5.4%) while in 44 patients (33.8%) the site was undetermined.Regarding the type of biopsies 111 (85.4%) were
excisional biopsies. Considering the histopathological patterns of the disease fibrosis was found in (97.7%) of patients, cyst in (96.9%), adenosis in (92.3%), apocrine metaplasia in (34.6%) of patients, epithelial hyperplasia in (42.6%) of patients, papillomatosis in (11.5%), sclerosing adenosis in (10%) of patients, chronic inflammation in (79.2%), while only (5.4%) of patients had calcification. Incidence of apocrine metaplasia among different age groups revealed that 17 patients (majority of patients) lie between 15 – 25 years while only 3 patients lie between 56 – 65 years. Forty one patients with non proliferative fibrocystic change their age lie between 15 – 25 years and only 5 cases were between 56 – 65 years of age. In patients with proliferative fibrocystic change 15 of them (majority) lie between 15 – 25, while only 3 cases between 56 – 65 years. Eight patients (25%) with epithelial hyperplasia lie between the ages 15 – 25 years while only 3 patients (9.4%) were between 56 – 65 years of age.

Table (1): Incidence of fibrocystic change of the breast among different sex groups in the study group (n=130)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid FEMALE</td>
<td>128</td>
<td>98.5</td>
<td>98.5</td>
<td>98.5</td>
</tr>
<tr>
<td>MALE</td>
<td>2</td>
<td>1.5</td>
<td>1.5</td>
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<tr>
<td>Total</td>
<td>130</td>
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Table (2): Residence of population study group (n=130)

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<th>Cumulative Percent</th>
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<tbody>
<tr>
<td>Valid KHARTOUM</td>
<td>68</td>
<td>52.3</td>
<td>52.3</td>
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<tr>
<td>OUT OF KHARTOUM</td>
<td>32</td>
<td>24.6</td>
<td>76.9</td>
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<tr>
<td>NOT KNOWN</td>
<td>30</td>
<td>23.1</td>
<td>100.0</td>
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<tr>
<td>Total</td>
<td>130</td>
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</table>
### Table (3): Type of biopsy in study population (n=130)

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<th>Type of Biopsy</th>
<th>Frequency</th>
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</tr>
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<tbody>
<tr>
<td>EXCISIONAL BIOPSY</td>
<td>111</td>
<td>85.4</td>
<td>85.4</td>
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<tr>
<td>INCISIONAL BIOPSY</td>
<td>8</td>
<td>6.2</td>
<td>91.5</td>
</tr>
<tr>
<td>TRUECUT BIOPSY</td>
<td>2</td>
<td>1.5</td>
<td>93.1</td>
</tr>
<tr>
<td>NOT KNOWN</td>
<td>9</td>
<td>6.9</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>130</td>
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</tbody>
</table>

### Table (4): Presenting symptoms among study group (n=130)

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<thead>
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<th>Symptom</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
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</thead>
<tbody>
<tr>
<td>BREAST MASS</td>
<td>122</td>
<td>93.8</td>
<td>93.8</td>
</tr>
<tr>
<td>OTHERS</td>
<td>1</td>
<td>.8</td>
<td>94.6</td>
</tr>
<tr>
<td>NOT KNOWN</td>
<td>7</td>
<td>5.4</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>130</td>
<td>100.0</td>
<td></td>
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</tbody>
</table>
Table (5): Breast mass in relation to site among study group (n=130)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid LEFT</td>
<td>38</td>
<td>29.2</td>
<td>31.1</td>
<td>58.2</td>
</tr>
<tr>
<td>Valid BILATERAL</td>
<td>7</td>
<td>5.4</td>
<td>5.7</td>
<td>63.9</td>
</tr>
<tr>
<td>Valid NOT KNOWN</td>
<td>44</td>
<td>33.8</td>
<td>36.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Valid Total</td>
<td>122</td>
<td>93.8</td>
<td>100.0</td>
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<tr>
<td>Missing SYSTEM</td>
<td>8</td>
<td>6.2</td>
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<td>Missing Total</td>
<td>130</td>
<td>100.0</td>
<td></td>
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</tr>
</tbody>
</table>
Figure (1): Incidence of fibrocystic changes among different age groups in the study group (n=130)

FIG (2) HISTOPATHOLOGICAL PATTERNS
Figure (3): Shows incidence of apocrine metaplasia among different age group (n=130)
Figure (4): Incidence of nonproliferative breast changes among different age groups in the study group \((n=130)\)

![Graph showing incidence of nonproliferative breast changes across different age groups.]

Figure (5): Incidence of proliferative breast changes among different age groups in the study group \((n=130)\)

![Graph showing incidence of proliferative breast changes across different age groups.]

Legend:
- **PRESENT**
- **ABSENT**
Discussion:
Fibrocystic change, the most commonly diagnosed benign breast disease, reflects a spectrum of changes that range from normal physiologic alterations in the breast to proliferative changes approximating in-situ carcinoma. To the extent of my knowledge no previous study done in Sudan to evaluate the incidence of the condition and its morphological patterns owing to racial variation affecting these issues.
In our study the age range of patients with fibrocystic change was between 15 – 65 years with the disease peak between 15 – 25 years of age and this in consonance with 13 -76 years for age range and 20-29 years for the disease peak in Nigerian study done by Ugiagbe et al(17).

Regarding the sex distribution of the disease we found that 98% (138 patients) of cases were females while only 2% (2 patients) were males this is in contrast to the literature. Case of fibrocystic change with hyperplasia and apocrine metaplasia was reported in male breast by John Mc Claure et al (18). Furthermore 7 cases of male having fibrocystic change were reported in Ugiagbe study in Nigeria.

When considering which breast was involved, of the 130 cases studied the left breast was involved in 29 % (38) of cases while the right breast was involved in 25.4% (33patients) of cases. This agrees with Rimstens(19) observation and Oluwole study(20) in Nigeria in which the left breast was involved in 57% of cases in comparison to 42% in the right.

We found that the commonest clinical presentation is a breast mass. This is different from the world wide literature in which breast pain is the common presenting symptom and this is explained probably by the late presentation of patients having the disease in Sudan because breast mass predominates with time(21). Regarding the common histopathological patterns we found that cyst and fibrosis are the basic morphological criteria of the disease accounting for 96.9% and 97.9% respectively and this is compatible with the literature (22).

Epithelial hyperplasia without atypia was found in 24.6% of cases which is compatible with the 26.7% in the relevant literature(23). The disease was found most frequent between the age 36 –45 years matching 35 -45 years in polly A.Coombs et al study (24).

Sclerosing adenosis which is a lesion having relative risk of malignancy was found in 10% of cases in this study which is consistent with 7.3% in Ugiagbe et al study 2011(17).

On considering apocrine metaplasia we found that the condition incidence was 34% in our study in comparison to 17% in Japan and 41% in USA in study done by Schuerch et al 1982 (25). This variation of apocrine change incidence is explained probably by racial differences. The peak age of apocrine metaplasia was between 26 – 35 years in the cases studied which match Schuerch et al study in which the condition peak in the third and fourth decade.

Papillomatosis incidence was 11.5% in my study which is consistent with 10% in Schuerch et al (25) study in Japanese. The disease peak is between 15-25 years in contrast to 40-50 years in Schuerch et al study. This discrepancy is explained by presence of cases having papillomatosis with their age undetermined in the request form.

Conclusion
Fibrocystic change (disease) is a disease of females. However we found two cases in males that show features that look like fibrocystic change.

The disease commonly affects younger age and the incidence decreases with increasing age in both proliferative and non-proliferative type of the disease.

Apocrine metaplasia is found in 34.6% of cases with a peak between 2nd and 3rd decade.

Breast mass is the commonest presentation relatively affecting the left side.

Most of biopsies are excisional.

Fibrosis, adenosis and cysts are the common histopathological pattern encountered in non proliferative type while epithelial hyperplasia is the dominant pattern in proliferative type of the disease.
References

23. N.Eng jMed.312:146.51.