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RESEARCH ARTICLE

Pattern of Non-Lactational Mastitis in Female of Reproductive Age Group

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Abstract

Background: Acute or chronic mastitis in non-lactating female is rising now a days. There is a spectrum of etiological factors ranging from infection to autoimmune disorders.The distinction among different forms of mastitis is of great importance since the management of these different entities varies. This study aimed to explore the clinical presentation and etiological factors of various mastitis in non-lactating female during their reproductive period.

Methods: A cross-sectional descriptive study was carried out on 100 female patients of reproductive period presented with the complains of different varieties of mastitis non related to lactation between 01-04-2018 to 30-04-2019 in Ad-Din Women's Medical College & Hospital. Patients were evaluated by history, clinical examination, imaging, FNACor tru cut biopsy, histopathology & pus culture.

Results: We found out of 100 patients, 58 cases were breast abscess (58%), 19 cases were granulomatous mastitis (19%), 11 cases were ANDI (fibrocystic disease) (11%), 8 cases were Idiopathic granulomatous mastitis (8%) & 4 cases were periductal mastitis (4%). The age of the patients was in between 18 to 50 years & the mean age was in between 31.77± 7.99 year. Staphylococcus aureus was most commonly isolated organism (61.97%). Rest of the patients culture showed S. epidermidis in 8.45% patients & Klebsiella in 2.81% patients. No growth was found in 26.76% cases.

Conclusion: Non-lactational mastitis causes considerable morbidity & psychological distress in females. The purpose of this study was to analyze spectrum of mastitis in non-lactating females thus help to provide prompt & appropriate management to prevent complications.

Keywords: Non-Lactational Mastitis, Granulomatous Mastitis, IGM, ANDI, Periductal Mastitis, Triple Assessment.

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1. Introduction

Mastitis is inflammation of the breast with or without infection. It may be lactational or nonlactational. Breast infection during lactational period is a common entity. But, it has been noticed that the number of non-lactating mastitis is increasing day by day. This can be attributed to the increased exposure of the breast tissue in response to female hormones. It may range from mild superficial mastitis to deep abscesses. Mastitis in non-lactating women mostly occurs in the reproductive age group and less commonly in menopausal women.[1]Inflammatory disease of female breasts encompass a large spectrum of diseases ranging from acute infective diseases to chronic autoimmune disease.[2]The exact etiology is obscure. Preexisting cytomorphological abnormalities such as nipple inversion, duct ectasia, duct metaplasia or other congenital abnormalities in the duct system may have significant role in etiopathogenesis.[3] In geographical area where tuberculosis is common, a picture of granulomatous inflammatory change is indicative of tubercular mastitis.[2] Most commonly, the disease presents as a lump in the central or upper-outer quadrant of the breast.[4]It is difficult to differentiate breast tuberculosis from carcinoma of the breast when it presents as a lump. Idiopathic granulomatous mastitis is an uncommon, benign, chronic inflammatory condition of unclear etiology, usually seen during pregnancy or lactational period.[5]It is also known as granular lobular mastitis & usually poses a diagnostic & therapeutic dilemma. [6] IGM was first described in 1972 by Kessler &Wolloch. [7] IGM is a rare inflammatory disease of the breast but it is important because clinically and radiologically it mimicks breast carcinoma. It is mostly seen in women of active reproductive age and rare in younger age. It causes psychological upsets and physical sufferings that leads to major impact on their productive life. Periductal mastitis & duct ectasia are considered part of the spectrum of the inflammatory process. However, the underlying cause of abscess & fistula formation is believed to be lactiferous duct or periareolar follicle obstruction associated with squamous metaplasia & hyperplasia.[8,9]Two types of nonpeurperal mastitis have been described according to location- central or periareolar& peripheral. Most of the non-lactating mastitis present with periareolar mastitis due to periductal inflammation. It tends to last longer & chance of recurrence is more. [1] Breast abscess is more common in young women, women of poor socioeconomic status, obese, smokers, diabetic patient & HIV related disorders than in the general population.[10]

2. Materials and Methods

2.1 Study Design

Cross sectional descriptive study.

2.2 Study Settings

The study was conducted from 1st April,2018 to 30th April,2019 at the department of surgery, Ad-Din women's Medical College & Hospital, Dhaka, Bangladesh.

2.3 Study Populations

Non-lactating female of reproductive age presented with symptoms and signs of mastitis.

2.4 Sampling Technique

Convenient sampling

2.5 Inclusion Criteria

i. Female patients of reproductive age presented with non-lactational mastitis

ii. Patients willing to undergone invasive procedure of diagnosis.

2.6 Exclusion Criteria

i. Patients of extreme of age (less than 12 years& more than 50 years)

ii. Lactating female with mastitis

iii. Pregnant women

iv. Malignant case

v. Those patients who will refuse to give consent to participate in this study.

3. Results

The study included non-lactating female patient of reproductive age presented with symptoms & signs of mastitis visited SOPD and admitted in Ad-Din Women's Medical College & Hospital. Every patient had USG of both breast & axilla and underwent a FNAC or trucut biopsy was done on OPD basis following a thorough clinical check-up. Then every patient underwent a definitive surgical procedure either incision & drainage or wide local excision of breast lump. All specimens that were obtained sent for histopathology & pus were sent for C/S.

Table 1. *Age incidence of non-lactational mastitis*

Non-lactational Mastitis							
Age	**Breast abscess**	**IGM**	**Granulo-matous Mastitis**	**Periductal Mastitis**	**FCC**	**Total**	**Test of significance**
≤25	16(64%)	0(0%)	5(20%)	1(4%)	3 (12%)	25	p=0.418
26-35	26(56.5%)	5(10.9%)	11(23.4%)	1(2.2%)	3(6.5%)	46	
>35	16(55.2%)	3(10.3%)	3(10.3%)	2(6.9%)	5(17.2%)	29	
Total	58(58%)	8(8%)	19(19%)	4(4%)	11(11%)	100	

Table 1 shows the age incidence of non-lactational mastitis. The age of the patients was in between 18 to 50 year and the mean age was 31.77± 7.99 year. Most (46%) patients were 26-35 year of age. 29% patients were >35 year of age. Rest of the patient (25%) belonged to ≤25 year age group. Statistically significant relationship was not found between age of the patient and non-lactational mastitis (p=0.418).

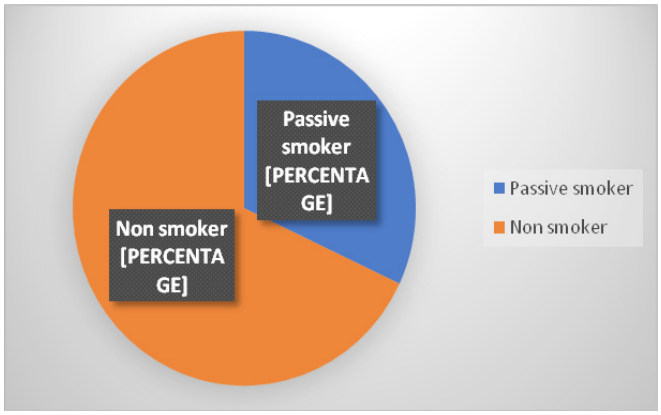

Figure 1. *Distribution of the patient by smoking history*

Figure 1 shows distribution of the patients by their smoking history. Most patients (68%) were nonsmoker and rest 32% patients were passive smoker.

Table 2. *Relationship between occupation of the patient and nonlactational mastitis*

Non-lactational Mastitis							
Occupat ion	**Breast abscess**	**IGM**	**Granulo-matous Mastitis**	**Periductal Mastitis**	**FCC**	**Total**	**Test of significance**
Student	9(69.2%)	0 (0%)	1(7.7%)	1(7.7%)	2 (15.4%)	13	p=0.025
ServiceHolder	9(34.6%)	3 (11.5%)	11(42.3%)	0(0%)	3 (11.5%)	26	
Housewife	40(65.6%)	5 (8.2%)	7(11.5%)	3(4.9%)	6 (9.8%)	61	
Total	58(58%)	8 (8%)	19(19%)	4(4%)	11 (11%)	100	
Student	9(69.2%)	0 (0%)	1(7.7%)	1(7.7%)	2 (15.4%)	13	

Table 2 shows relationship between occupation of the patient and non-lactational mastitis. Statistically significant relationship was found between occupation of the patient and mastitis (p=0.025).

Table 3. *Relationship between history of OCP use by the patient and non-lactational mastitis*

Non-lactational Mastitis							
OCP user	**Breast abscess**	**IGM**	**Granulo-matous Mastitis**	**Periductal Mastitis**	**FCC**	**Total**	**Test of significance**
Yes	20(45.5%)	5(11.4%)	10(22.7%)	2(4.5%)	7(15.9%)	44	p=0.215
No	38(67.9%)	3(5.4%)	9(16.1%)	2(3.6%)	4(7.1%)	56	
Total	58(58%)	8(8%)	19(19%)	4(4%)	11(11%)	100	

Table 3 shows relationship between history of OCP use by the patient and no-lactational mastitis. Statistically significant relationship was not found between OCP user and non-lactational mastitis (p=0.215).

Table 4. *Relationship between history of onset and non-lactational mastitis*

Non-lactational Mastitis							
History of onset	**Breast abscess**	**IGM**	**Granulo-matous Mastitis**	**Periductal Mastitis**	**FCC**	**Total**	**Test of significance**
First time	53(63.9%)	5(6%)	11(13.3%)	4(4.8%)	10(12%)	83	p=0.005
Recurrent	5(29.4%)	3(17.6%)	8(47.1%)	0(0%)	1(5.9%)	17	
Total	58(58%)	8(8%)	19(19%)	4(4%)	11(11%)	100	

Table 4 shows relationship between history of onset and non-lactational mastitis. Statistically significant relationship was found between history of onset and non-lactational mastitis (p=0.005).

Table 5. *Relationship between history of trauma and non-lactational mastitis*

Non-lactational Mastitis							
History of traum a	**Breast abscess**	**IGM**	**Granulo-matous Mastitis**	**Periductal Mastitis**	**FCC**	**Total**	**Test of significance**
Yes	5(83.3%)	0(0%)	0(0%)	1(16.7%)	0(0%)	6	p=0.282
No	53(56.4%)	8(8.5%)	19(20.2%)	3(3.2%)	11(11.7%)	6	
Total	58(58%)	8(8%)	19(19%)	4(4%)	11(11%)	100	

Table 5 shows relationship between history of trauma of the patient and non-lactational mastitis. Statistically significant relationship was not found between history of trauma of the patient and non-lactational mastitis (p=0.282).

Table 6. *Relationship between history of previous breast surgery & non-lactational mastitis*

Non-lactational Mastitis							
History of breast surgery	**Breast abscess**	**IGM**	**Granulo-matous Mastitis**	**Periductal Mastitis**	**FCC**	**Total**	**Test of significance**
Present	3(21%)	3(21%)	7(50%)	0(0%)	1 (7.14%)	14	p=0.542
Absent	55 (63.9%)	5 (5.81%)	12(13.95%)	4(4.65%)	10 (11.63%)	86	
Total	58(58%)	8(8%)	19(19%)	4(4%)	11(11%)	100	

Table 6 shows relationship between history of previous breast surgery and non-lactational mastitis. Statistically significant relationship was not found between history of previous breast surgery and non-lactational mastitis (p=0.542).

Table 7. *Relationship between parity and non-lactational mastitis*

Non-lactational Mastitis							
Parit y	**Breast abscess**	**IGM**	**Granulo- matous Mastitis**	**Periductal Mastitis**	**FCC**	**Total**	**Test of significance**
Nulli parous	58(58%)	1(5.3%)	2(10.5%)	0(0%)	2 (10.5%)	2	p=0.719
Parous	44(54.3%)	7(8.6%)	17(21%)	4(4.9%)	9 (11.9%)	98	
Total	58(58%)	8(8%)	19(19%)	4(4%)	11(11%)	100	

Table 7 shows relationship between parity and non-lactational mastitis. Statistically significant relationship was not found between history of parity of the patient and non-lactational mastitis (p=0.719).

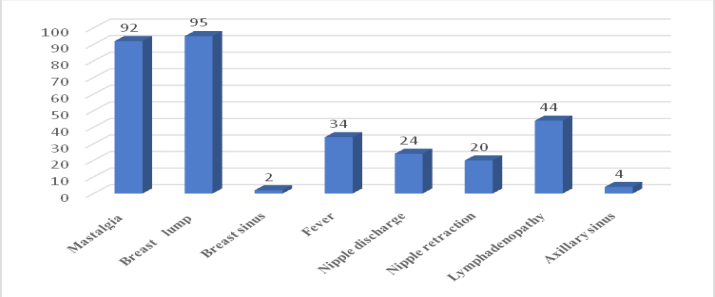

Figure 2. *Clinical presentation of non-lactational mastitis*

Figure 2 shows clinical presentation of non-lactational mastitis. Patients most commonly presented with breast lump (92%) and mastalgia (95%). Others presentation were lymphadenopathy (44%), fever (34%), nipple discharge (24%), nipple retraction (20%), axillary sinus (4%) and breast sinus (2%).

Table 8. *Comparison of FNAC &trucut biopsy report with histopathology report*

Non-lactational Mastitis							
Report	**Breastabscess**	**IGM**	**Granulo-matousmastitis**	**Periductalmastitis**	**FCC**	**Suspicious**	**Total**
FNAC	38(63.33%)	3(5%)	9(15%)	2(3.33%)	8(13.33%)	0(0%)	60
Trucut	19(47.5%)	3(7.5%)	8(20%)	2(5%)	2(5%)	6(15%)	40
Histopathology	58(58%)	8(8%)	19(19%)	4(4%)	11(11%)	0(0%)	100

Table 8 shows comparison of FNAC &trucut biopsy report with histopathology report. FNAC was done in 60 patients and trucut biopsy was done in 40 patients for initial diagnosis. On FNAC, breast abscess (63.33%) was most common, idiopathic granulomatous mastitis was 5%, granulomatous mastitis was 15%, periductal mastitis was 3.33% and fibrocystic changes was 13.33%. On trucut biopsy, breast abscess (47.5%) was also most common variation, idiopathic granulomatous mastitis was 7.5%, granulomatous mastitis was 20%, periductal mastitis was 5%, fibrocystic changes was 5% and suspicious cases were 15%.

Table 9. *Distribution of the patient according to histopathology report*

Histopathologyreport	Frequency	Percentage
Breastabscess	58	58.0
Granulomatousmastitis	19	19.0
Fibrocysticchanges	11	11.0
Idiopathicgranulomatousmastitis	8	8.0
Periductalmastitis	4	4.0
Total	100	100.0

Table 9 shows distribution of the patient according to histopathology report. All patients were undergone surgical procedure either incision & drainage or wide local excision followed by histopathology. Most patients (58%) had breast abscess. 19% patients had granulomatous mastitis. 11% had fibrocystic changes and 8% had idiopathic granulomatous mastitis. Rest 4% belonged to periductal mastitis. No malignant cases were detected.

Table 10. *Distribution of the patient according to pus culture*

Bacteria	Frequency	Percentage
Staphylococcusaureus	44	61.97
No growth	19	26.76
Staphylococcusepidermidis	6	8.45
Klebsiella	2	2.81
Total	71	100.0

Table 10 shows distribution of the patient according to pus culture report. Pus sample was collected from 71% patients and sent for C/S. On culture, Staphylococcus aureus was found most prevalent (61.97%) organism. S. epidermidis was found in 8.45% and Klebsiella was found in 2.81% cases. No growth was found in 26.76 % sample.

4. Discussion

The frequency of inflammatory diseases of female breasts among non-lactating female is raising day by day. Non-lactational mastitis causes considerable morbidity & anxiety of patient regarding malignancy. Due to the delicate nature of the active breast tissue prompt & appropriate diagnosis & management is essential. Delay or inadequate management may lead to tissue destruction, chronic infections, recurrence, periductal fistula & breast deformities. In developing countries, the picture of presentation of patients with breast inflammation is different from western countries. Here, patients usually present with breast abscess either acute or chronic due to negligence. In this study, most of the patient was presented with breast abscess (58%) rest of the patient presented with

granulomatous mastitis (19%), FCC (11%), IGM (8%) & periductal mastitis (4%). The age of the patients was in between 18 to 50 years & the mean age was 31.77±7.99 years. The majority of patients were between 26 to 35 years of age (46%). A retrospective study of 179 female presented with breast infection & undergone treatment at surgical unit of King Fahd of the University, Saudi Arabia[1]. The age of the patients ranged from 24 years to 52 years which coincides with this study (18 to 50 years). Another retrospective cohort study of 124 patients with breast abscess was conducted by Ramakrishnan R et al. at a tertiary care university teaching hospital in Chennai, India.[11] The age of the patient was in between 18 to 56 years & mean age was 24 years of age. The majority of the women were between 18 to 34 years of age (83%). This also approximate with our study. Sandhu GS et al. conducted an observational study on 50 patients of breast abscess both lactational & non-lactational, who were either admitted or treated as outdoor patients.[14]The majority of patients (36%) belonged to 36 to 45 years & average age of patients was 38.82 years. These findings nearly approximates with this study (31.77±7.99 years). Another retrospective study was conducted among 50 patients admitted in Amrita Institute of Medical Sciences with inflammatory disease of breast between January 2005 & December 2010 by C. Gopalakrishnan Nair et al.[2] Median age of patients was 33 years. This closely coincides with this study. A prospective randomized observational descriptive study was carried out among 50 patients with mammary tuberculosis from 2006 to 2010 by Md Matiar Rahaman Khan et al. at Chittagong Medical College Hospital & Chittagong General Hospital.[12] They found 52% patients presented at age range 31 to 40 years & average age was 38 years. It coincides with the median age of this study. So, considering above studies younger women are mostly affected with nonlactational mastitis. Most patients (68%) were nonsmoker & rest of the patients (32%) patients were passive smoker in this study. No patient was active smoker. JM Dixon et al. noticed a strong association of smoking with periductal mastitis. It has been suggested that smoking either directly or indirectly damages wall of the subareolar breast ducts making them vulnerable to infections.[10]But this study did not found significant relationship between smoking & non-lactational mastitis or periductal mastitis (p=0.925). In study of C. Gopalakrishnan Nair et al. all of the patient were nonsmoker(100%). This finding coincides with this study. In this study, most of the patients were housewives(61%), 26% were service holder & 13% were student. We found statistically significant relationship between occupation & non-lactational mastitis(p=0.025). Sandhu GS et al. also found that housewives (74%) were commonly affected than working women (26%).[13]This closely approximates with this study. This can be explained that women of this study mostly belonged to middle class family where women are traditionally engaged in domestic work only. These patients have less awareness of personal health & health care facilities. 44% patients were OCP user & 56% patients were non OCP user in this study. There was no significant relationship between OCP using & non-lactational mastitis (p=0.215). In this study, 83% patients presented with non-lactational mastitis for the first time & 17% patients (8 cases with granulomatous mastitis, 5 cases with breast abscess, 3 cases with IGM & 1 case with FCC) presented as recurrence case. There is significant relationship between history of onset & non-lactational mastitis (p=0.005). Only 6% patients had history of trauma & rest 94% patients had no history of trauma. So, there is no significant relationship between history of trauma & non-lactational mastitis (p=0.282). In this study 14% patient had history of previous breast surgery due to same condition. Among them 3 cases were breast abscess, 3 cases were IGM, 7 cases were granulomatous mastitis & 1 case was FCC. 86% patients had no history of previous breast surgery. So, statistically no significant relationship was found between breast surgery & non-lactational mastitis (p=0.542). 98% patients were parous & rest 2% patients were nulliparous. Statistically no significant relationship was found between parity & non-lactational mastitis (p=0.719). Patients most commonly presented with breast lump (95%) and mastalgia (92%). Lymphadenopathy was associated with breast lump and mastalgia in 44% cases. Nipple discharge (24%) and nipple retraction (20%) were also common. Others presentation were fever (34%), axillary sinus (4%) and breast sinus (2%). Patients were undergone FNAC (60%) or trucut biopsy (40%) for initial diagnosis in OPD. Breast abscess was most commonly found in both FNAC (63.33%) and trucut biopsy (47.5%). Suspicious cases were 15%. Later all suspicious cases were found non-malignant on histopathological examination. Histopathological examination of biopsy taken from breast lump found breast abscess in 58 cases (58%), granulomatous mastitis in 19 cases (19%), fibrocystic changes in 11 cases (11%), IGM in 8 cases (8%) and periductal mastitis in 4 cases (4%).There were no cases of breast

carcinoma in this study. Maha SA Abdel Hadi et al. found that majority of cases presenting with breast infections 136(76%) were lactating & 43(24%) were non lactating women.[1] Lactating patients were having non-specific breast abscess, whether non-lactating women were having non-specific breast abscess was 17(40%) & specific inflammations were 26(60%) namely- granulomatous mastitis 13(30%), periductal mastitis 4(9.3%), pregnancy 3(6.9%), fat necrosis 1(2.32%), diabetes 3(6.9%) & breast cancer 2(4.6%).[1] The percentage of nonspecific breast abscess almost coincides with this study that majority of nonlactating breast infection presented with breast abscess. C. Goplalakrishnan Nair et al. studied on 50 patients with inflammatory disease of the breast in nonlactating female.[2]They found IGM in 38 patients (76%) & periductal mastitis in 12 patients (24%). These findings do not coincide with findings of this study. Sandhu GS et al. conducted an observational study on 50 patients presented with breast abscess & found nonlactating breast abscess in 24 patients (48%), lactating breast abscess in 10 patients (20%) & rest16 patients (32%) with benign or malignant breast disease which were excluded from the study.[13] Here, the majority of patients were suffering from nonlactating abscess (48%) that coincides with this study. Md Matiar Rahaman et al. found mammary tuberculosis in 40(80%) nonlactating female & in 10(20%) lactating female.[12]This does not coincide with the incidence of granulomatous mastitis (19%) of this study. But, it signifies that incidence of nonlactating breast infection either nonspecific or specific is increasing now a days. Ramakrishnan R et al.[11] conducted study on 124 patients & found 97 patients (78%) with lactational breast abscess & 27 patients (22%) with nonlactational breast abscess. These findings do not coincide with this study. On analyzing culture & sensitivity reports of pus samples, the culture was grown in 71% patients. Staphylococcus aureus was the common organism grown in 61.97% patients. Rest of the patients' culture showed no growth in 26.76% patients, S. epidermidis in 8.45% patients &Klebsiella in 2.81% patients. C. Gopalakrishnan Nair et al. found S. aureus in 41.66%, Klebsiella in 8.33% & Pseudomonas aeruginosa in 25% cases presented with periductal mastitis.[2] Incidence of S. aureus growth coincides with this study. Ramakrishnan R et al. showed that among 27 nonlactating breast abscess S.aureus was found in 58% patients, Group B Streptococcus in 24% patients, Proteus in 11% patients & Acinetobacter SPP in 7% patients.[11] Maha SA Abdel Hadi et al. found S. aureus in 56% cases, group B Streptococcus in 15% cases, Klebsiella in 9% cases, M. tuberculosis in 9% cases, MRSA in 7% cases, Peptococcusmagnus in 2% cases & Enterobacter cloacae in 2% cases of nonlactating breast abscess.[1] This disparity of culture in different studies with present study is due to small number of patients in those series & variation of organisms in different regions. But, S. aureus was commonly isolated in maximum number of cases in all series. Most of the non-lactating mastitis present with periareolar mastitis (with or without an associated mass) due to periductal inflammation or with an established abscess associated with central breast pain, nipple retraction and nipple discharge. Peripheral mastitis is uncommon, but often associated with a preexisting condition such as diabetes, rheumatoid arthritis, steroid therapy, granulomatous disease and trauma. Breast abscess is more common in young women, women of poor socioeconomic status, obese, smokers, diabetic patients and HIV related disorders than in general population.[13] In this study, non-specific breast abscess is the most common type of presentation. It appears at first as acute mastitis but due to lack of diagnosis or negligence & aggressive management often complicated by abscess formation. The distinction between mastitis & frank abscess should be done as the management of these two entities varies from antibiotics to drainage either by aspiration or classical incision. Treatment with antibiotics without drainage may lead to antibioma formation. Granulomatous mastitis is the second most common condition & its incidence among nonlactating women is increasing day by day. It may be primary when no other focus of tuberculosis is detectable or secondary when a source can be identified mainly located pulmonary.[11]The commonest clinical presentation is lump, painful or not, most often located in the central or upper quadrant of the breast. Fistula, nipple or skin retraction & axillary lymphadenopathy may be present. The treatment of breast tuberculosis consists of antitubercular chemotherapy for 6-9 months. Surgical intervention in the form of wide local excision of lump, drainage of pus in breast abscess or excision of residual sinus tracts is required as indication.

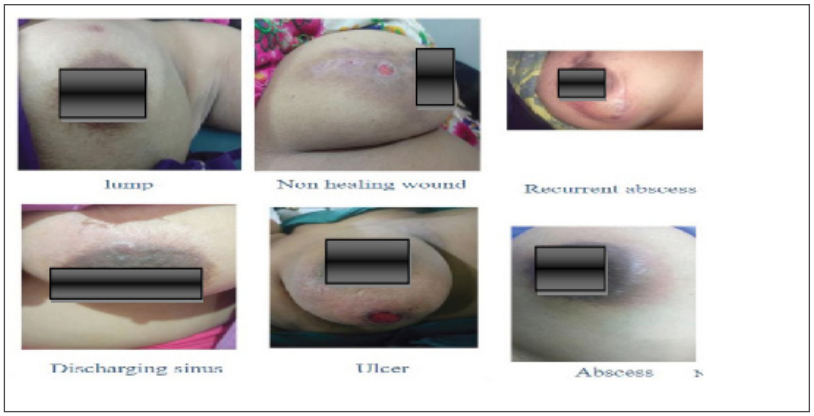

Figure 3. *Different presentation of non-lactational mastitis.*

IGM is a rare chronic inflammatory disease of the breast which incidence is increasing. The etiology of IGM is quite unknown as it is caused by localized autoimmune reactions to extravasated materials from milk duct. Focal autoimmune reaction induced by an unknown insult appears to be strong possibility. Some studies noted large population of CD3 positive T lymphocytes infiltration in and around the inflamed ducts and minor proportion of CD20 positive B lymphocytes around the inflamed ducts on immunohistochemical staining.[2]The most common clinical presentation is a firm unilateral, discrete breast mass, often associated with aninflammation of overlying skin. Nipple retraction, sinus formation & axillary lymphadenopathy may be present. The hallmark of the diagnosis of IGM is presence of non-caseating granulomas along with lobulitis. The treatment of choice for IGM is unclear.In symptomatic patients with infection NSAID with antibiotics is given. In case of persistent disease Prednisolone with or without Methotrexate has helped to disease regression. Periductal mastitis was the common type of non-lactational abscess & constituted 1-2% of symptomatic breast diseases. Patients usually present with noncyclical mastalgia, nipple discharge, nipple retraction, a subareolar breast lump with or without overlying skin inflammation, a periareolar abscess & a mammary fistula.[10]Thediagnosis of periductal mastitis is done by clinical findings, imaging & histopathological findings of inflammatory changes around ducts. Many cases resolve with a course of antibiotics with needle aspiration but major duct excision is needed in subareaolar abscess or sepsis. Smoking cessation is needed to prevent recurrence. Fibrocystic disease is now termed as ANDI. The diagnosis is made by mammography or USG followed by tru cut biopsy or FNAC of lump. Treatment ranges from assurance & advice to medical therapy like evening primrose oil, Danazol, Tamoxifen are effective.[12] Wide local excision of lump may be needed in chronic cases. There is little known reguarding association of non-lactational mastitis & breast cancer risk. Papillomatosis and proliferative diseases with or without atypia are considered as high risk breast lesion. Chun-Ming Chang et al found 37 cases of breast cancer patient having history of nonlactational mastitis among 111 breast cancer patient. They found the risk of breast cancer in women with non-lactational mastitis is significantly higher than those without non-lactational mastitis.[14]But, as our study is not retrospective in nature we could not analyze association between non-lactational mastitis & breast cancer.

5. Conclusion

Non-lactational mastitis is now becoming a frequent clinical condition occurring in women of reproductive age group requiring special attention. Triple assessments including clinical examination, imaging & histopathological (Tru cut biopsy) examinations are required for accurate diagnosis of underlying condition. Early diagnosis & proper management can reduce the patients' morbidity, emotional distress and risk of carcinoma. So, appropriate management should be instituted after diagnosing the underlying cause as early as possible.

Limitations

1. The study was done on a small sample size. So, findings obtained from this study may not represent the real scenario of the disease.
2. The study period was short to analyze the condition.
3. This was a single institution study that might not reflect the whole population.
4. The study could not analyze breast cancer risk of the sample due to limited time.
5. Immunohistochemical staining with CD3 and CD 20 antibodies facilities were not available.

Acknowledgement

The authors would like to express their sincere thanks to all patients who participitated in this study.

Ethical Considerations

Ethical clearance was taken from ethical clearance board of Ad-din Women's Medical College.

Abbreviations

ANDI- Aberrations of Normal Development and Involution

IGM- Idiopathic Granulomatous Mastitis

FNAC- Fine Needle Aspiration Cytology

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Conflict Of Interest

No conflict of interest.

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