

TREATMENT OUTCOME OF SURGERY FOLLOWED BY CORTICOSTEROID THERAPY FOR IDIOPATHIC GRANULOMATOUS MASTITIS

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Abstract

Introduction: Idiopathic granulomatous mastitis (IGM) is a rare, benign, and chronic inflammatory breast condition that has been shown to have radiological and clinical similarities to breast cancer. In spite of the fact that the cause of IGM is unknown, various contributing variables have been identified, such as a reaction to chemical substances like OCP, viral disorders, autoimmune diseases, and an immunological response to milk leakage from the breast lobule. Although various methods have been used for IGM treatment (such as surgical excision, steroids, methotrexate, etc), no consensus currently exists regarding the ideal method of treatment. Due to its positive response to steroid treatment, it is hypothesized that IGM is an autoimmune disease and is well responds to corticosteroid therapy. The aim of this study is to observe the treatment outcomes of surgery and corticosteroid therapy in IGM.

Materials and Methods: This quasi experimental study was conducted in Department of Surgery, Khulna Medical College Hospital from 8th August 2018 to 8th August 2019. Total 30 patients were enrolled and allocated in two groups a ratio of 1:1. In group-A there were 15 patients, received surgical treatment with corticosteroid therapy and group-B, 15 patients received only surgical treatment. A wide local excision (WLE) was done in surgical procedure to remove area of diseased unhealthy tissue with a margin of normal tissue. Corticosteroid therapy was given orally in the following regimen: 8 weeks of steroid therapy with prednisolone at 0.5mg/kg/day for 4 weeks and then tapered down slowly for 4 weeks. Then subsequent follow up conducted after 2 months and after 4 months of primary treatment to observe the treatment outcomes. Statistical analysis was carried out by using the Statistical Package for Social Sciences version 23.0 for Windows (SPSS Inc., Chicago, Illinois, USA). A descriptive analysis was performed for all data. The mean values were calculated for continuous variables. The quantitative observations were indicated by frequencies and percentages. Unpaired student t-test was used to compare continuous variables. Chi-square test used to compare categorical data. A “p” value of <0.05 was considered as significant. Result was presented by tabulation and graphical presentation in the form of tables, pie chart, graphs, bar diagrams, histogram & charts etc.

Result: Maximum numbers of patients (50.0%) were between 31-40 years age group, mean±SD age was 29.7±10.2 years. The left breast was affected in 16(53.3%) patients, right breast in 12(40.0%) patients and bilateral in 2(6.7%) patients. Included 30 patients were allocated in two groups. Among them in group-A there were 15 patients (Surgical treatment with corticosteroid therapy) and group-B, 15 patients (Surgical treatment alone). Wide local excision was performed in all patients. Concomitant corticosteroids therapy was used in selective group (group-A). Study shows that 22(73.3%) of the patients recovered completely (80.0% versus 66.7% in group-A and group-B respectively). There was a statistically significant difference ($p < 0.05$). Present study revealed that incidence of complications and recurrence rate was 8(26.7%) patients, among them 3(20.0%) were of group-A, while 5(33.3%) patients were group-B.

Conclusions: Present study concluded that treatment outcomes of surgery, followed by corticosteroid therapy can be preferred at Idiopathic granulomatous mastitis (IGM) in the means of less early or late postoperative complication, resolution of symptoms with high accuracy rate to relief symptoms.

Key-words: Idiopathic granulomatous mastitis (IGM), surgical excision, corticosteroid.

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Introduction:

Idiopathic granulomatous mastitis (IGM) is a rare benign inflammatory breast entity characterized by lobulocentric granulomas. IGM is a chronic or recurrent condition which affects parous premenopausal women who have previously breastfed. It has additionally been linked to hyperprolactinemia¹. The cause has not yet been fully determined, however it could be an immunological condition, an infection, a chemical response brought on by oral contraceptives, or even lactation. Recently, additional causes have been implicated, including hormonal instability, autoimmune, microbiological agents, smoking, and alpha-1 antitrypsin deficiency. When the etiological component for a problem can be established, it is referred to as specific granulomatous mastitis; when it cannot, it is referred to as IGM.²

The importance of IGM, a rare inflammatory breast disease, can be attributed to two factors. Breast cancer mimics IGM's initial clinical and radiological symptoms, and only histopathology can definitively establish the differential diagnosis. Second, IGM is challenging to manage, particularly when it manifests as a fistula and an abscess. Diagnostic and therapeutic challenges still exist due to the condition's rareness and uncertain etiology^{3, 4}. The best course of treatment for IGM is now medical therapy, extensive local excision, and abscess drainage; however, the ideal course of treatment has not yet been identified⁵.

The histology of IGM is suggestive of an autoimmune disease. Histological characteristics revealed that inflammatory reaction with granulomas which composed of epithelioid histiocytes, Langhans giant cells accompanied by lymphocytes, plasma cells and occasional eosinophils centered on lobules³. High proportions of bilateral cases and relapses are both strongly suggestive of a systemic propensity. The majority of the available research suggests that increased prolactin levels or overt hyperprolactinemia, along with additional triggers like local trauma or irritation, play a significant role in the condition. Alpha 1-antitrypsin deficiency also documented. Other contributing factors of IGM were investigated

such as oral contraceptives usage. Use of prolactin elevating medications such as antipsychotics also found predisposing factor^{3, 4}. Other hormones can also influence PRL signaling in the breast gland; for example, high insulin levels brought on by pregnancy-related peripheral insulin resistance, gestational diabetes, or the onset of type 2 diabetes will enhance the galactogenic and antiapoptotic effects of PRL and growth hormone by interacting with IGF-1 synergistically⁴.

Common clinical characteristic include palpable breast mass, may have related skin changes, presentation can be similar to breast cancer, occurs anywhere in the breast except the nipple, may result in sinus tract out onto skin, may have multiple sinus tracts in advanced cases⁶. Imaging features, such as the parenchymal heterogeneity and abscess formation, together with enlarged axillary lymph nodes, support the presence of an inflammatory process. However, these findings are not specific and do not exclude malignancy^{2, 3}. USG and MMG identified an irregular and ill-defined mass in the majority of patients⁷.

The optimal treatment of IGM remains controversial. Surgical excision still seems to be the best treatment. Wide local excision can be appropriate treatment also provide exact diagnosis and treatment. Different recurrence rates (range 5.5%-50%) are reported after wide local excision⁸. There was 6.6% of recurrence rate after wide local excision³. Complications seem to be related to both the disease process as well as the surgical procedures including skin ulceration, abscess and sinus formation, fistulae, wound infection, recurrent of disease post treatment and chronic mastitis followed by excisional biopsies. In some cases, there are systemic signs and symptoms such as arthralgia, skeletal pain, multiple lymphadenopathies, even in mediastinum⁹. Several reports have described that corticosteroid administration and/or wide excision are effective¹⁰. Therefore, aim of this study was to assess the treatment outcomes of surgery followed by corticosteroid therapy in IGM

Materials & Methods:

This quasi experimental study was conducted in Department of Surgery, Khulna Medical College Hospital from August 2018 to August 2019. Patients with idiopathic granulomatous mastitis were selected. Patients with tubercular granulomatous mastitis, mastitis due to sarcoidosis, mastitis due to mycosis or patients having contraindications to corticosteroid therapy were excluded. Total 30 patients were enrolled and allocated in two groups a ratio of 1:1. In group-A there were 15 patients, received surgical treatment with corticosteroid therapy and group-B, 15 patients received only surgical treatment. A wide local excision (WLE) was done in surgical procedure to remove area of diseased unhealthy tissue with a margin of normal tissue. Corticosteroid therapy was given in the following regimen: 8 weeks of steroid therapy with prednisolone at 0.5mg/kg/day for 4 weeks and then tapered down slowly for 4 weeks. Then subsequent follow up conducted after 2 months and after 4 months of primary treatment to observe the effectiveness. All patient in both arm completed treatment. No drop out was noticed during treatment. Patient data such as age, residence, occupation, clinical presentation, etc. were noted. All the information recorded in data collection sheet. Data was processed and analysed with the help of computer program SPSS and Microsoft excel. Quantitative data expressed as mean and standard deviation and qualitative data as frequency and percentage. Result was presented by tabulation and graphical presentation in the form of tables, pie chart, graphs, bar diagrams, histogram & charts etc.

Result:

Table-I

Demographic Characteristics of the Patients (n=30)

Variables	Frequency	Percentage	p value
Age			
20-30	12	40.0	0.825
31-40	15	50.0	
41-50	3	10.0	
51-60	0	0	
Mean±Sd	29.7±10.2		
Residence			
Rural	11	36.7	0.072
Urban	19	63.3	

Table shows the demographic characteristics of the patients. Maximum numbers of patients (50.0%) were between 31-40 years' age group. The mean±SD age was 29.7±10.2 years. Large numbers of respondents came from urban area (63.3%), followed by rural area (36.7%). Most of the women were primigravida 17(56.7%).

Table-II

Clinical variables of the respondents (n=30)

Clinical presentations	Frequency*	Percentage
Clinical presentations		
Breast lump	30	100.0
Pain in the breast	30	100.0
Skin ulceration	21	70.0
Nipple retraction	14	46.7
Weakness/fatigue	20	66.7
Discharge	3	10.0
Location		
Periareolar region	9	30.0
Diffuse	7	23.3
Upper external quadrant	6	20.0
Inferior external quadrant	4	13.3
Upper internal quadrant	1	3.3
Inferior internal quadrant	1	3.3

*Multiple responses

Table II shows clinical variables of the respondents. Most common symptom was lumpiness in the painful breast lump and skin ulceration (100.0% & 70.0% respectively). Other manifestations were nipple retraction in 46.7%, weakness/fatigue in 66.7% of patients. Table shows the location of lesions in the breast. The left breast was affected in 16(53.3%) patients, right breast in 12(40.0%) patients and bilateral in 2(6.7%) patients. The lesions were located in upper external quadrant in 6 (20.0%) patients, in upper internal quadrant in 1 patient (3.3%) in inferior internal quadrant in 1 patient (3.3%), in inferior external quadrant in 4(13.3%) patients, in periareolar region in 9 patients (30.0%) and diffuse involvement was seen in 7 patients (23.3%).

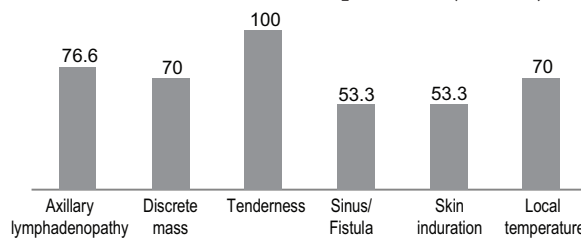


Figure 1: Clinical examination findings (n=30)

Figure 1 shows the clinical examination findings. Out of 30 respondents, axillary lymphadenopathy found in 76.6% cases,

Table-III
Outcome of cases after management (n=30)

Treatment outcome	Group A No. (%)	Group B No. (%)	Total	p-value
Complete recovery	12 (80.0%)	10 (66.7%)	22	0.042*
Delayed recovery due to complications	3 (20.0%)	3 (20.0%)	6	1.000
Recurrence	0	2 (13.3%)	2	0.015*
Total	15	15	30	

Table-IV
Comparison of surgical site and postoperative complications (n=30)

Variables	Group A No. (%)	Group B No. (%)	Total	p-value
Healthy wound with good healing	12 (80.0%)	10 (66.7%)	22	0.042*
Purulent discharge from the site	3 (20.0%)	3 (20.0%)	6	1.000
Tenderness and localised erythema	2 (13.3%)	5 (33.3%)	7	0.025*
Redness or heat	3 (20.0%)	5 (33.3%)	8	0.038*
Lumpiness in the breast	0	2 (13.3%)	2	0.015*

Multiple respondents

discrete mass in 70.0% of patients, tenderness in all patients (100%) and sinus/Fistula reported in 53.3% subjects.

Present study shows that 22(73.3%) of the patients recovered completely (80.0% versus 66.7% in group-A and group-B respectively). The difference was statistically significant. In this study recurrence rate was 2(6.7%) of patients and all of them were group-B. The difference was statistically significant.

Table IV shows comparison of surgical site and postoperative complications. It is evident from the table that, total 7 patients developed tenderness and localised erythema from the site with group B predominance (13.0% vs. 33.3% in group-A and group -B respectively). Redness or heat was found in 3 patients in group A and 5 patients in group B. In this study 12 cases in group A while 10 cases in group B had healthy wound with good healing. The difference was statistically significant.

Discussion:

In this study maximum numbers of patients (50.0%) were between 31-40 years' age group, mean±SD age was 29.7±10.2 years. Previous

study by Jeon et al (2017) reported that forty-one patients (95.34%) were of childbearing age¹¹. The patients in another study conducted by Yukawa et al. (2015) had a mean age of 41 years. Premenopausal patients constitute the entire group. Six patients in the previous five years had breastfed. Antidepressants were being taken by five patients¹⁰.

In this study, most common symptom was lumpiness in the painful breast lump and skin ulceration (100.0% & 70.0% respectively). Other manifestations were nipple retraction in 46.7%, weakness/fatigue in 66.7% of patients. Out of 30 respondents, axillary lymphadenopathy found in 76.6% cases, discrete mass in 70.0% of patients and sinus/Fistula reported in 53.3% subjects. The left breast was affected in 16(53.3%) patients, right breast in 12(40.0%) patients and bilateral in 2(6.7%) patients. Similar findings reported that 21 (48.83%) cases of IGM of the right breast, and 21 (48.83%) of the left breast, while one patient had multiple lesions affecting both breasts¹¹. Another study showed that common presenting symptom was palpable lump in the breast with or without pain

and mastitis had inflamed hyperemic skin and pain¹⁰. Another study reported most common symptom of IGM is a palpable mass, predominantly unilateral; bilateral lesions are rarely observed¹². Occasionally the mass is accompanied by pain, skin thickening, fistulas, or axillary lymphadenopathy¹³.

The most acceptable management for such cases in recent documents is combination of surgical interventions such as lumpectomy, open biopsy and using pharmaceutical agents such as antibiotics and corticosteroids. Because of the nature of the disease which is an inflammatory reaction, any form of surgical intervention will be an unsuitable procedure and may become a disaster for both patient and the physician⁹. Present study shows that 22(73.3%) of the patients recovered completely (80.0% versus 66.7% in group-A and group-B respectively). The difference was statistically significant. Present study revealed that incidence of complications and recurrence rate was 8(26.7%) patients, among them 3(20.0%) had group-A, while 5(33.3%) patients had group-B.

A rare chronic inflammatory breast illness known as granulomatous mastitis (GM) has no recognized cause. The best treatment for GM is still not universally recognized. Most frequently documented in the literature are corticosteroid therapy and/or extensive excision¹⁰. In a study by Jeon et al demonstrated that all patients were given steroid therapy in their study, surgical resection, or both. Patients were monitored on an outpatient basis at intervals of 1 to 2 weeks in the clinic until the lesion disappeared after treatment completion; follow-up visits were scheduled twice at 6-month intervals. Corticosteroids were administered to 36 patients (83.72%); the other seven patients (16.27%) underwent surgery immediately after diagnosis. Corticosteroid treatment was initiated at a dose of 0.4 mg/kg/day. No patient experienced any side effects¹¹. Sakurai et al and Salehi et al reported that for resistant and complicated cases, corticosteroid administered is recommended after excision to prevent recurrence^{4, 14}. Karanlik H et al reported that steroid therapy was effective in the treatment

of IGM by reducing the lesion size and extent. With regard to the current treatment options available for IGM, surgical excision after steroid therapy seems the better treatment option compared to steroid therapy without surgical excision. This treatment sequence reduces the rate of recurrence¹⁵.

Conclusions:

Present study confirmed that surgical treatment with corticosteroids is an effective and appropriate treatment option for IGM. It can provide complete disease resolution and prevent recurrence in the long term. This treatment sequence would potentially prevent the inflammatory process, reduce the size of the surgical scar and the recurrence rates.

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