

# Effectiveness of Local Methylprednisolone Application in the Treatment of Idiopathic Granulomatous Mastitis

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## İdiyopatik Granulomatöz Mastit Tedavisinde Lokal Metilprednisolon Uygulamasının Etkinliği

### ABSTRACT

**Objective:** Idiopathic granulomatous mastitis is a painful disease with rare inflammation in the breast, which does not have a clear treatment. The present study has been planned to evaluate the effect of local methylprednisolone treatment on the clinical course of the disease in the treatment of IGM (Idiopathic Granulomatous Mastitis). The primary endpoint of the study is to evaluate the effectiveness of systemic and local steroid therapy, while the secondary endpoint is to demonstrate the effect of steroid use on the duration of treatment and the need for additional intervention.

**Method:** The study, planned as a retrospective file scan, included a total of 60 patients who applied to our hospital for IGM between 2016 and 2018. The patients were divided into two groups as those who received oral methylprednisolone or oral methylprednisolone + topical methylprednisolone therapies. Demographic data, the results of the ultrasonography performed during the determination of the size, the follow-up and the treatment of the mastitis area, duration of the treatment, and additional interventions were analyzed.

**Results:** The duration of treatment of patients in the first group was found to be statistically significantly longer than those in the second group ( $p=0.001$ ). Although surgical excision was performed in 2 patients in Group 1 after medical treatment, no surgical intervention was required in any patient in Group 2.

**Conclusion:** In addition to oral methylprednisolone treatment, the application of topical methylprednisolone in the treatment of IGM both shortens the length of the treatment period and reduces the need for surgery.

**Keywords:** idiopathic granulomatous mastitis, methylprednisolone, mastitis, steroid

### ÖZ

**Amaç:** İdiyopatik granülomatöz mastit, memenin ender görülen enflamasyonla seyreden ağrılı, tedavisi net olmayan bir hastalıdır. Bu çalışma, İGM (İdiyopatik Granulomatöz Mastit) tedavisinde lokal metilprednisolon uygulamasının hastalığın kliniğine etkisini değerlendirmek amacıyla planlanmıştır. Çalışmanın primer sonlanım noktası sistemik ve lokal steroid tedavinin etkinliğini değerlendirmek, sekonder sonlanım noktası ise steroid kullanımının tedavi süresine ve ek müdahale gerekliliğine etkisini ortaya koymaktır.

**Yöntem:** Retrospektif dosya taraması şeklinde planlanan çalışmaya, hastanemizde IGM nedeniyle 2016-2018 yılları arasında başvuran toplam 60 hasta dâhil edildi. Hastalar; oral metilprednisolon tedavisi ve oral metilprednisolon + topikal metilprednisolon tedavisi uygulanan hastalar olmak üzere iki gruba ayrıldı. Demografik veriler, mastit alanının büyüklüğünü belirlemede ve mastit alanının takibinde tedavi sürecinde yapılan ultrasonografi sonuçları, tedavi süresi, ek müdahaleler incelendi.

**Bulgular:** Birinci gruptaki olguların tedavi süresi, ikinci gruptaki olgulara göre istatistiksel olarak anlamlı düzeyde yüksek saptanmıştır ( $p=0,001$ ). Grup 1'de 2 hastaya medikal tedavi sonrası cerrahi eksizyon yapılmasına rağmen, Grup 2'de hiçbir hastaya cerrahi müdahale yapılmak zorunda kalmadı.

**Sonuç:** İGM tedavisinde uygulanan oral metilprednisolon tedavisine ek olarak topikal metilprednisolon tedavisinin de uygulanması, hem tedavi süresini kısaltmakta, hem de cerrahiye duyulan gereksinimi azaltmaktadır.

**Anahtar kelimeler:** idiopatik granülomatöz mastit, metilprednisolon, mastit, steroid

Received/Geliş: 21.04.2020

Accepted/Kabul: 04.09.2020

Published Online/Online yayın: 30.09.2020

Atif vermek için: Gemici E, Akdoğan Gemici A. Effectiveness of local methylprednisolone application in the treatment of idiopathic granulomatous mastitis. İKSSTD 2020;12(3):254-7.

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## INTRODUCTION

Idiopathic granulomatous mastitis (IGM) is a benign and chronic inflammatory lesion that is rarely seen in the breast, with an unknown etiology<sup>(1)</sup>. There is no established gold standard treatment approach yet. However, medical treatment, wide local excision, and abscess drainage are among the preferred approaches. Steroid use has been at the forefront in IGM treatment in recent years<sup>(2)</sup>. The present study has been planned to investigate the therapeutic effect of combined use of topical and oral prednisolone.

## MATERIAL and METHODS

A total of 60 patients who were treated for IGM between 2016 and 2018 were included in the study. Tissue examinations were performed in all patients and all of them were diagnosed with IGM. Ultrasonographic imaging was applied as a standard in the detection and follow-up of the size of the inflammatory area. After the drainage procedure in the presence of an abscess, patients without any contraindication for steroid therapy as evaluated by the endocrinology clinic were started on steroid therapy and those who were treated were identified. The patients were divided into two groups as those for whom oral methylprednisolone (1 mg/kg, 2x1) treatment was started (Group 1) and those for whom oral methylprednisolone (1 mg/kg, 2x1) + topical methylprednisolone (1% metilprednisolon, 1x1) was started (Group 2). The duration of treatment was determined as a maximum of 8 weeks.

Data of the patients concerning demographic data, ultrasonographic findings, the extent of the disease when starting treatment, the duration of treatment, the effectiveness of the treatment, requirement of additional (if any) intervention and the postoperative follow-up were analyzed. Patients who were not diagnosed with IGM, who had missing data in their

files and whose control examinations were not performed were excluded from the study. This study was conducted in accordance with the principles of Helsinki Declaration after receiving the approval of the institutional ethics committee (ethics committee research approval number: 2020/09).

## Statistical Analysis

The NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) program was used for the statistical analysis. Descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, maximum) were used when evaluating the study data. The conformity of quantitative data for normal distribution was tested by the Shapiro-Wilk Normality test and graphical examinations. Student's t-test was used for comparing the normally distributed quantitative variables, while the Mann-Whitney U test was used for comparing the non-normally distributed quantitative variables between the two groups. The Fisher Exact test was used to compare the qualitative data. The statistical significance was accepted as  $p < 0.05$ .

## RESULTS

The median age of the patients was 34 years. There was no statistically significant difference between the groups in terms of ultrasonographic measurements of the inflammatory areas of the patients ( $p=0.055$ ). There was no statistically significant difference between the groups in terms of patients' quadrant distributions ( $p=0.260$ ). The durations of treatment of patients in the first group were found to be statistically significantly longer than those of the patients in the second group ( $p=0.001$ ). Although 2 patients in Group 1 underwent surgical excision after medical treatment, no surgery was required in any patient in Group 2. When the 6-month control US reports in the patient files retrieved from the hospital database were examined, it was found that

**Table 1. Comparative characteristics of the groups.**

		Total	Group 1 (n=30)	Group 2 (n=30)	P-score
Age (year)	Mean $\pm$ SD	34 $\pm$ 7	35 $\pm$ 7	32 $\pm$ 7	<sup>a</sup> 0.055
Ultrasound finding (cm)	Min-Max (Median)	2-6 (3.1)	2-6 (3.1)	2-6 (3.2)	<sup>b</sup> 0.420
Treatment period (week)	Min-Max (Median)	2-8 (3)	2-8 (4)	2-6 (3)	<sup>b</sup> 0.001
Quadrant it is placed n (%)	1 quadrant	42 (70.0)	23 (76.7)	19 (63.3)	
	2-3 quadrant	18 (30.0)	7 (23.3)	11 (36.7)	<sup>c</sup> 0.260

<sup>a</sup>Student's t-test, <sup>b</sup>Mann-Whitney U Test, <sup>c</sup>Fisher Exact Test

no recurrence occurred in both groups radiologically (Table 1).

## DISCUSSION

While various factors such as oral contraceptive use, infectious agents, pregnancy, breastfeeding, breast trauma, and hyperprolactinemia accompanied by galactorrhea, antitrypsin deficiency and the use of antidepressant drugs were shown to increase the risk of IGM, its etiology is not clear yet <sup>(3-6)</sup>.

The optimum treatment approach for IGM has not yet been published since the disease is not widespread. Aggressive surgical approaches should be avoided in IGM as an initial treatment for patients whose clinical findings are not very severe. However, surgical intervention is inevitable in patients whose diseases cannot be brought under control medically or who have severe clinical findings (recurrent abscess, fistula) from the disease onset. On the other hand, complicated cases with abscess, fistula and widespread involvement make the treatment difficult <sup>(7)</sup>.

Steroid treatment has become prominent especially in recent years due to postoperative abscess formation, wound infection and the possibility of recurrence of the disease. Sato et al. continued treatment by tapering the steroid doses upon decrease in mass size with palpation and ultrasonography after 2 weeks of daily doses of 60 mg steroid (prednisolone) treatment and decrease in cellularity in FNAB had been observed after 3 weeks <sup>(8-10)</sup>.

Antibiotics are used in most patients before the diagnosis is made due to the inflammatory nature of the disease. After the diagnosis of IGM is made histopathologically and the presence of infection is eliminated, the steroid treatment is started. Daily treatment dose is 30-60 mg prednisolone which is typically continued for several weeks. In the series published by Hovanessian Larsen et al., 77% of the patients showed clinical improvement after steroid treatment. In their study, clinical improvement was found to be only 5% in patients receiving antibiotics <sup>(6)</sup>. Erözgen et al. continued their daily steroid use for 2 weeks and ceased it by tapering the dose within the following 2 months. Clinical improvement was seen

in 25 patients in this study and they applied abscess drainage or surgical excision before steroid treatment <sup>(11)</sup>. Öcal et al. reported that recurrence was not seen in the follow-up of patients after applying daily doses of 30 mg prednisolone for 8 weeks after surgical excision in 6 patients with local recurrence <sup>(12)</sup>. Steroid use may be useful in the treatment of IGM, but its role in bringing granuloma formation under control and resolving it has not been proven yet <sup>(13)</sup>.

In the present study, antibiotic therapy was performed only in patients with clinic manifestations of purulent discharge or abscess. Success rates in the treatment with oral methylprednisolone (93%) or oral methylprednisolone+topical methylprednisolone (100%) were as indicated. Besides, additional surgical intervention was not required in patients undergoing topical treatment. The duration of treatment was statistically significantly shorter in the group in which topical methylprednisolone treatment was added to oral methylprednisolone treatment when compared with the group that received only oral methylprednisolone.

As the most important limitations of the study, it has a retrospective design, it does not include long-term follow-up results yet and patient compliance to treatment could not be evaluated.

In conclusion, in addition to oral methylprednisolone treatment in IGM treatment, it was found that the application of topical methylprednisolone treatment had a significant effect on shortening the treatment duration and decreased the need for surgical intervention. It is thought that more clear results can be achieved with prospective randomized controlled studies involving longer follow-up times.

**Ethics Committee Approval:** The study has been approved by the Clinical Research Ethics Committee (2020/09) of Bakirkoy Dr. Sadi Konuk Training and Research Hospital.

**Conflict of Interest:** The authors declare no conflict of interest.

**Funding:** The authors received no specific funding for this work.

**Informed Consent:** Is a retrospective study.

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