

Granular Myringitis Treatment at Siriraj Hospital

Kanokrat Suvarnsit, M.D.*, Thansamorn Chantarawiwat, M.D.*, Sarun Prakairungthong, M.D.*, Siriporn Limviriyakul, M.D.*, Suvajana Atipas, M.D.*, Pittayapon Pitathawatchai, M.D.**

*Department of Oto-Rhino-Laryngology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, **Department of Otolaryngology Head and Neck Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla 90110, Thailand.

ABSTRACT

Objective: To review the clinical features and management of patients diagnosed with granular myringitis at Siriraj Hospital, during 2014–2016, and their applications in clinical practice.

Methods: The clinical data of 115 patients diagnosed with myringitis at the Department of Otorhinolaryngology, Faculty of Medicine Siriraj Hospital, between September 1, 2014, and September 30, 2016, were retrospectively reviewed. Patients who were lost to follow-up after the first visit or patients who were diagnosed with other diseases, such as bullous myringitis, were excluded, leaving 96 patients included in the study. Patient information and data, including age, gender, underlying disease, history of ear disease and surgery, symptoms, duration, type of treatment, outcome, total follow-up time, complications, and recurrence rate were recorded.

Results: In total, 96 patients (27 men (28.10%) and 69 women (71.90%)) were included in the study. Their ages ranged from 3 to 90 years old (mean, 52.88). Sixty-two patients (64.60%) were diagnosed by otologic staff. The average duration of symptoms from onset was 5.6 months (range, 0.03–60.80 months). The most frequent symptom was otorrhea (55.3%). There were 38 treatment regimens applied. The most common medications used were topical antibiotics with steroids (28.11%), topical antibiotics (24.91%), and diluted vinegar (17.08%). There was no significant difference in the curative rate between these regimens ($p = 0.261$).

Conclusion: Granular myringitis is a poorly understood condition and there is no standard treatment regimen. While there is a great variation in the treatment of granular myringitis at Siriraj Hospital, this retrospective review showed there was no statistical significant difference among the different regimens. Further high-value research is needed to further assess the management strategies.

Keywords: Granular myringitis; chronic myringitis (Siriraj Med J 2020; 72: 502-507)

INTRODUCTION

Granular myringitis is characterized by a chronic inflammation of the tympanic membrane leading to the replacement of its epithelial surface and, occasionally, adjacent deep meatal skin with proliferating granulation tissue¹ (Fig 1). It is possible that this condition may have been underdiagnosed in the past due to the low magnification power available under physical examination by using an otoscope instead of a microscope. Moreover,

it may have been misdiagnosed as otitis externa or chronic otitis media, in which case the same treatment would help to improve myringitis as well. Although granular myringitis is a minor illness, it can lead to several complications, such as tympanic membrane perforation, post-inflammatory canal fibrosis, or atresia.^{2,3} Patients usually seek treatment because of their annoying symptoms; for example, malodorous otorrhea, intrameatal itching, feeling aural fullness, and earache.⁴

Corresponding author: Suvajana Atipas

E-mail: grsat2@gmail.com

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ORCID ID: <http://orcid.org/0000-0002-5760-1339>

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Fig 1. Left granular myringitis - the granulation tissue presents on the surface of the tympanic membrane with associated inflammatory changes to the external auditory canal epithelium.

At present, the etiology of this condition is unclear. It may be an infectious process, inflammation, or local trauma. Clinicians can treat this condition with topical ear drops, which are topical antibiotics with/without steroid drops, or diluted vinegar solution.⁵ Some also use a LASER or other chemical substances, and surgical intervention has even been reported in the previous literature.⁶ Recently, the medication of choice has normally depended on the causative organism identified by tissue/fluid cultures, which typically are bacteria or fungi.^{4,7} These organisms grow best in a narrow pH range, i.e., from pH 6.5 to 7.5.⁸ So, the management of various types of external otitis is to maintain the acidity of the external canal to prevent their growth. In order to acidify the ear canal for treatment involving draining the ear, acetic acid and Burow's solution have long been successfully used.^{9,10} As in folk medicine, vinegar can be used to manage external otitis with good effect.¹¹ It is possible that the acidification of the external ear has a good effect on granular diseases of the tympanic membrane by preventing bacterial growth and the stimulation of squamous re-epithelialization. However, a standard effective regimen for granular myringitis is lacking and remains in need.

In this study, we reviewed the records of patients diagnosed with myringitis at Siriraj Hospital, as a supertertiary care hospital, during 2014-2016. The objective of this review was to determine the optimal management for the treatment and prevention of the recurrence of granular myringitis that could later be applied in clinical practice.

MATERIALS AND METHODS

The research was approved by the Institutional Review Board of the Faculty of Medicine Siriraj Hospital, Mahidol University (Si 728/2559).

The clinical data of 115 patients (34 males and 81 females) diagnosed with myringitis based on ICD-10 code (H73) at the Department of Otorhinolaryngology, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand, between September 1, 2014, and September 30, 2016, were retrospectively reviewed.

The exclusion criteria were patients who were lost to follow-up after the first visit and patients who were diagnosed with other diseases, such as bullous myringitis. Patient information and data, including age, gender, underlying diseases, history of ear diseases and surgeries, affected side, symptoms, duration, investigations, type of treatment, outcome, total follow-up time, complications, and recurrence rate, were recorded.

The follow-up outcomes were categorized into 4 grades: "Resolved," when an intact completely epithelialized TM without otorrhea, moistness, or subjective complaints was documented; "Improved," when there was a marked improvement in both the physical signs and subjective symptoms; "Unchanged," when there was little or no improvement of the TM appearance or symptoms; or "Worse," when the subjective symptoms had an exaggerated or increased otorrhea, or the myringitis or granulation tissue occupied a larger area of the TM. We classified resolved and improved as "good outcomes" and unchanged and worse as "poor outcomes."

Statistical analysis

PASW Statistics (SPSS) version 18.0 (SPSS Inc., Chicago, IL., USA) was used for the statistical analysis. Quantitative data are reported herein as the mean +/- SD and qualitative data are reported as the number of patients and as percentages. The Chi-square test was used to compare categorical data. A probability (*p*) value of less than 0.05 was considered statistically significant.

RESULTS

Demographic data

Between September 1, 2014, and September 30, 2016, 115 patients were identified with a diagnosis of myringitis based on ICD10 (H73) and considered for inclusion in the study; however, 19 patients were excluded as they were also diagnosed with other diseases too, such as bullous myringitis, acute otitis media, or mastoiditis, leaving 96 patients included in the study.

The 96 patients included in the study comprised 27 men (28.10%) and 69 women (71.90%), aged from

3 to 90 years old (mean, 52.88 years old). The right ear was affected in 50 patients (52.10%), the left in 36 (37.50%), and both in 10 (10.40%). Sixty-two patients (64.60%) were diagnosed by otologic staff, while 34 patients (35.40%) were diagnosed by non-otologic staff and residents. The average total follow-up time was 31.2 weeks (range, 0.86–160.86 weeks). The average duration of symptoms was 5.6 months (range, 0.03–60.8 months). The presenting symptoms varied, including otorrhea in 47 patients (55.30%), aural fullness in 40 patients (47.10%), itching in 17 patients (20.00%), earache in 22 patients (25.90%), and tinnitus in 12 patients (14.10%). Recurrence was noted in 12.5% of patients. None of the patients had any complications, such as ear canal stenosis post treatment.

Many patients had associated medical illness; for example, allergic and/or chronic rhinitis (25.00%), hypertension (25.00%), dyslipidemia (18.80%), diabetes mellitus (15.60%), and chronic kidney disease (4.20%).

Also, 43 patients (44.79%) had a history of other ear diseases, such as closed TM perforation (13.54%), TM perforation (12.50%), otitis externa (9.38%), otomycosis (6.25%), otitis media (1.04%), impact cerumen (1.04%), and bilateral superior canal dehiscence (1.04%). The patient who had bilateral superior canal dehiscence

developed granular myringitis after myringotomy with a pressure equalization tube (PE tube) placement.

Fifteen patients (15.63%) had a previous TM perforation prior to the diagnosis of granular myringitis. Thirteen patients (13.54%) underwent tympanoplasty and 2 patients (2.08%) underwent a paper patch. Two patients (2.08%) had myringotomy and a PE tube placement and 1 patient (1.04%) had a history of ear wax removal. The duration between otologic procedures and the onset of granular myringitis ranged from 0.53 to 361.33 months. (median, 68.90 months)

Outcome

The total number of visits was 397 visits, involving 96 patients. However, 116 of those visits involved patients ultimately lost to follow-up. Thus, the outcomes of only 281 visits were evaluated. In this review, there were 38 treatment regimens. We categorized these into 4 groups: no treatment (7.47%), single topical ear drop treatment (40.57%) or adjuvant treatment (11.74%), topical ear drop with adjuvant treatment (37.37%), and surgery (2.85%). Adjuvant treatments noted in the literature included antiseptic solutions, chemical cauterization, oral antifungal, oral antibiotics, and intravenous antibiotics. (Tables 2 and 3)

TABLE 1. Demographic data and clinical characteristics of the 96 patients reviewed in detail in the study.

	Number (%) or Mean (Min, Max)
Sex	
Female	69 (71.90)
Male	27 (28.10)
Age (year)	52.88 ± 19.24 (3,90)
Affected side	
Bilateral	10 (10.40)
Right	50 (52.10)
Left	36 (37.50)
Duration of symptoms (month)	5.6 ± 13.69 (0.03 - 60.8)
Total follow-up time (month)	3.18 ± 9.93 (0.22 - 40.22)
Clinician	
Staff	
Otologist	62 (64.60)
Non-otologist	20 (20.80)
Resident	14 (14.60)
Recurrence	
Yes	12 (12.50)
No	55 (57.30)
Could not be evaluated	29 (30.20)

TABLE 2. Topical ear drops.

	Visit (n = 218)	Outcome	
		Poor (%) (n = 67)	Good (%) (n=151)
Antibiotic	70	24 (34.28)	46 (65.71)
Alone	38	15 (39.47)	23 (60.52)
With adjuvant treatment	32	9 (28.13)	23 (71.87)
Antibiotic with steroid	79	25 (31.65)	54 (68.35)
Alone	48	16 (33.33)	32 (66.67)
With adjuvant treatment	31	9 (29.03)	22 (70.97)
Diluted vinegar	48	11 (22.92)	37 (77.08)
Alone	18	5 (27.78)	13 (72.22)
With adjuvant treatment	30	6 (20.00)	24 (80.00)
Antifungal	18	5 (27.78)	13 (72.22)
Alone	7	1 (14.29)	6 (85.71)
With adjuvant treatment	11	4 (36.36)	7 (63.63)
2.5% NaHCO ₃ in glycerine	3	2 (66.67)	1 (33.33)
Alone	3	2 (66.67)	1 (33.33)
With adjuvant treatment	0	0 (0.00)	0 (0.00)

TABLE 3. Adjuvant treatments.

	Visit (n = 154)	Outcome	
		Poor (%) (n = 43)	Good (%) (n=111)
Topical antiseptic	65	15 (23.08)	50 (76.92)
Alone	23	5 (21.74)	18 (78.26)
With adjuvant treatment	42	10 (23.81)	32 (76.19)
Cauterization	30	7 (23.33)	23 (76.67)
Alone	5	2 (40.00)	3 (60.00)
With adjuvant treatment	25	5 (20.00)	20 (80.00)
Oral antibiotic	51	18 (35.29)	33 (64.71)
Alone	5	2 (40.00)	3 (60.00)
With adjuvant treatment	46	16 (34.78)	30 (65.22)
Oral antifungal	7	3 (42.86)	4 (57.14)
Alone	0	0 (0.00)	0 (0.00)
With adjuvant treatment	7	3 (42.86)	4 (57.14)
IV antibiotic	1	0 (0.00)	1 (100.00)
Alone	0	0 (0.00)	0 (0.00)
With adjuvant treatment	1	0 (0.00)	1 (100.00)

The most common topical ear drops used to treat granular myringitis included topical antibiotics with steroids (28.11%), topical antibiotics (24.91%), and diluted vinegar (17.08%). The adjuvant treatments most frequently used were antiseptics (23.13%), oral antibiotics (18.15%), and cauterization (10.68%). Diluted vinegar was only used by otologists in 48 visits: 37.50% as a single treatment and 62.50% combined with another treatment.

The outcomes of each treatment regimen were compared using Chi-square test. The result showed no statistical significant difference between outcomes among these regimens ($p = 0.261$).

DISCUSSION

Between 2014 and 2016, 115 patients were diagnosed with granular myringitis at the Department of Otorhinolaryngology, Faculty of Medicine, Siriraj Hospital, of whom 96 were included in the present study. The prevalence of granular myringitis was higher in women (71.90%) than in men (28.10%), with a 2.6-fold greater prevalence in women. The most frequent presenting symptom was an otorrhea. Other symptoms recorded include a sensation of fullness, mild pain, or itching in the ear. Recurrence was noted in 12.50% of patients and some were affected bilaterally.

A predisposing health condition may not be associated with granular myringitis according to the small percentage of each underlying condition demonstrated in this study. Generally, injury to the epithelial layer and exposure of the fibrous middle layer causes the formation of granulation tissue in an attempt to heal the defect.⁴ Schuknecht described the focal or diffuse replacement of the dermis of the tympanic membrane and adjacent canal wall with granulation tissue as a characteristic of granular myringitis.¹² Blevins and Karmody reported that 60% of patients, both adults and children, had undergone previous otologic procedures.¹³ In this study, only 18.75% of patients had undergone an otologic procedure prior to the development of granular myringitis, in which the duration between the otologic procedure and the onset of symptoms ranged from 0.53 to 361.33 months (mean, 68.90 months). This percentage was lower than in previous studies. This was possibly because the average duration was longer than the healing process of the tympanic membrane, so it seems like the healed surgical site was similar to being in a normal condition.

To date, granular myringitis remains a poorly understood condition and the proposed treatments are quite variable. A 2008 systemic review of the management of granular myringitis concluded that there was insufficient high-quality evidence to support

any particular management plan or treatment protocol for patients with granular myringitis.¹⁴ In this review, there were many different treatment regimens for granular myringitis at Siriraj Hospital. After meticulous aural toilet, topical antibiotics with steroid drops and topical antibiotic drops were the most frequently used in this study, often combined with another adjuvant treatment, such as a topical antiseptic, oral antibiotic, and chemical cauterization. Diluted vinegar was also used but only by otologists and the results showed a good outcome in 77.10% of cases. Surgical interventions were limited in use, and involved only 2.85% of cases that had failed to respond to medical treatment, but led to a high success rate (87.5%). All the surgical interventions in this study were myringoplasty. However, there was no significant difference in the success rate between each treatment group.

The limitation in this study was due to a small number of patients. A further study of longer data collecting period could yield significant outcome. A study of randomized controlled trial utilizing a larger population is suggested.

CONCLUSION

Granular myringitis is a poorly understood condition and there is no standard effective treatment regimen. Regarding our results, topical ear drops, such as antibiotic ear drops with or without a steroid, or diluted vinegar, showed fair outcomes in the treatment with an about 60–80% success rate, without any statistical significant difference among these regimens. Hence, diluted vinegar solution might be considered as another option for patients with granular myringitis because it is less likely to cause bacterial resistance and also as it is safe, low-cost, and has high availability despite the unfamiliarity with its use among many general practitioners. However, further high-value research (i.e., randomized controlled trials) is needed to further assess and identify the most appropriate management strategies that could both resolve granular myringitis and prevent its recurrence.

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Conflicts of interest

The authors declare that they have no conflict of interest.

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