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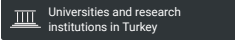
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EurAsian Journal of BioSciences

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
Turkey 	Agricultural and Biological Sciences └ Agricultural and Biological Sciences (miscellaneous) Biochemistry, Genetics and Molecular Biology └ Biochemistry, Genetics and Molecular Biology (miscellaneous) Environmental Science └ Environmental Science (miscellaneous)	Foundation for Environmental Protection and Research	12
PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
Journals	13079867	2013-2020	Homepage How to publish in this journal ejobios@ejobios.org

SCOPE

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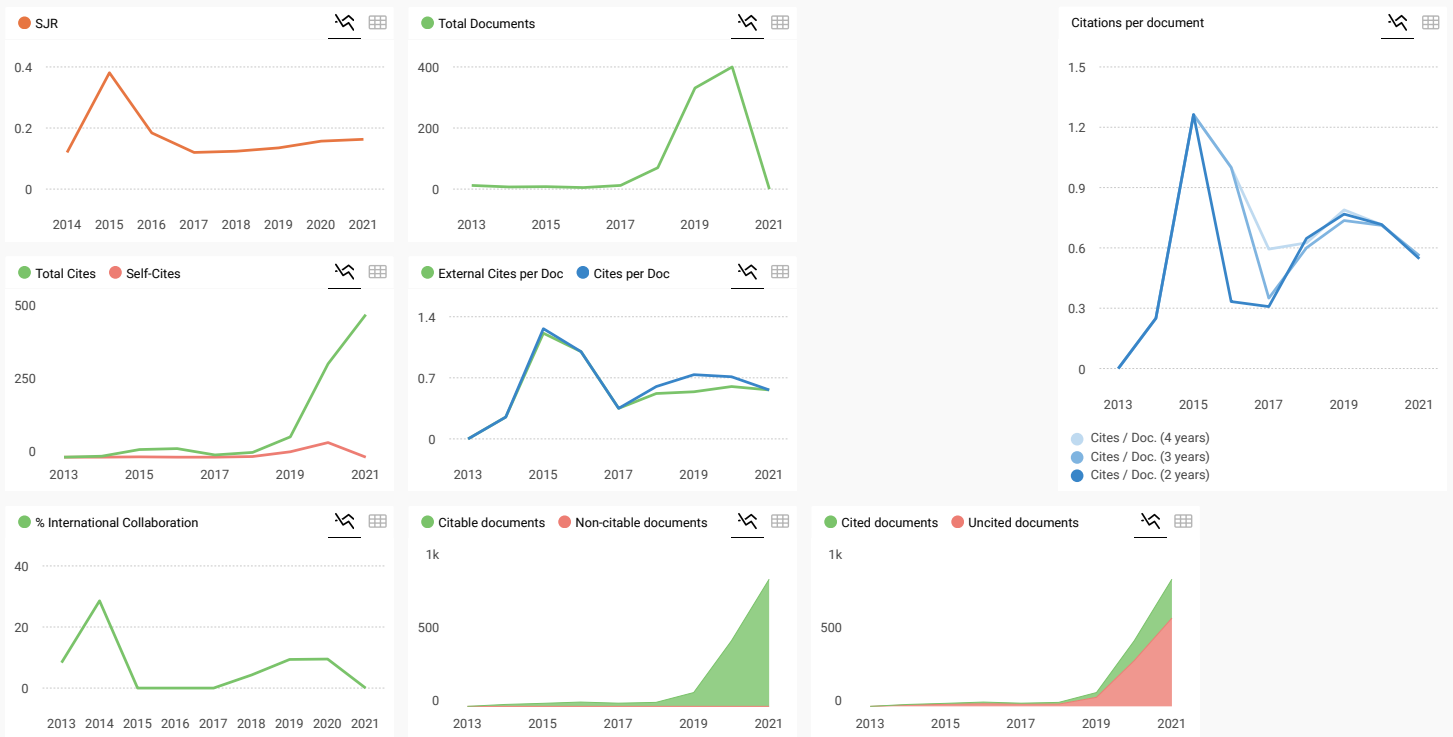
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EurAsian Journal of BioSciences

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SJR 2021 0.16

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Best Regards, SCImago Team

SCImago Team

M **Mamdoh M Meqdam** 4 months ago

Pls. send me

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reply

Melanie Ortiz 4 months ago

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SCImago Team

N

nourah m 5 months ago

hi
i need the Editorial board of Eurasian Journal of Biosciences
thank you

[reply](#)**Melanie Ortiz** 5 months ago

SCImago Team

Dear Nourah,
Thank you for contacting us. Please see comments below.
Best Regards, SCImago Team

R

Ramadan 5 months ago

Dear
Greetings
Please I need to know the editors of the journal Eurasian Journal of Biosciences
All the best
Dr. Ramadan

[reply](#)**Melanie Ortiz** 5 months ago

SCImago Team

Dear Ramadan,
Thank you for contacting us.
We suggest you visit the journal's homepage.
Best Regards, SCImago Team

N

Ndoc Vata 6 months ago

In the Vol.14, year 2020 I was publishing an article (Evolution of soil surface nutrient balance in arable land of Albania).
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[reply](#)

N

Ndoc Vata 6 months ago

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A

Aws Ibrahim Sulaiman 7 months ago

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in titled The antibacterial effect of Frankincense and apple vinegar against Klebsiella spp. isolated from UTI patients
but for now not found in Scopus preview

← reply



Melanie Ortiz 7 months ago

SCImago Team

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Mariam Alla Tuma 1 year ago

Good day
may I know how long time from submitting a paper to get an acceptance letter? and how much the publication fee? Can you tell me if this journal (EurAsian Journal of BioSciences) was in Scopus or not.
Thanks

← reply



Melanie Ortiz 1 year ago

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Best Regards, SCImago Team



Mutaz 1 year ago

Dears
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Regards

← reply



Melanie Ortiz 1 year ago

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H.s 2 years ago

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Plz help us
It is our article title
((Evaluate the Surgical and Orthodontic Treatments in Children with Sleeping Breathing Disorder: A Systematic Review and Meta-Analysis))

← reply



shaymaa 2 years ago

please how much the fee?????



Melanie Ortiz 2 years ago

SCImago Team

Dear Dr.Shaymaa,
thank you for contacting us.
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Melanie Ortiz 2 years ago

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S

sarah 2 years ago

hi, how can i publish in your journal? and is there a template format to follow?
thanks in advance

reply



Buthaina 2 years ago

Hello all,
I had received acceptance letter to publish my paper in February of this year, but till now the journal didn't publish it. Is there a problem with this journal and is it still in scopus



Melanie Ortiz 2 years ago

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Sarah 2 years ago

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Melanie Ortiz 2 years ago

SCImago Team

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Best Regards, SCImago Team

M

Moatasem Alsalih 2 years ago

Greetings and Regards

An article titled

Evaluation of cellular oxidative stress levels in aedes aegypti mosquitoes as a reaction of photo catalyst modify nanoparticles exposure

published in

EurAsian Journal of BioSciences

in date 2020/9/29

why still out side Scopus database

please if you can consider this article in Scopus database as soon as and inform the correspondence author

at last please accept my true and best regards

reply



Melanie Ortiz 2 years ago

SCImago Team

Dear Moatasem,
thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you contact Scopus support: https://service.elsevier.com/app/answers/detail/a_id/14883/kw/scimago/supporthub/scopus/
Best Regards, SCImago Team

A

Abeer Thaher Naji AL-Hasnawi 2 years ago

I published a research paper in your wonderful journal under the title (Role of interleukin 25 and interleukin 33 as immunological markers in pediatric asthma), and it has not been released yet in the author profile of Scopus preview, knowing that this research is dependent on my scientific promotion. Please add it quickly to the Scopus preview, with best regards.

reply



shahzad 2 years ago

I also face the same problem and I contact the scopus and they said this journal is delisted now. It's very sad that the scopus listed journal in 2020 and yet our paper not included



Melanie Ortiz 2 years ago

SCImago Team

Dear Abeer,
thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you contact Scopus support: https://service.elsevier.com/app/answers/detail/a_id/14883/kw/scimago/supporthub/scopus/
Best Regards, SCImago Team

N

NAYYEF ALMALIKI 2 years ago

Dear sir
Why this journal announced it ceased publication. Is it still in Scopus.

reply

S

Shaimaa 2 years ago

It is not, its out now



Melanie Ortiz 2 years ago

SCImago Team

Dear Shaimaa,
thank you for contacting us. Could you please send the source of that information?
Best Regards, SCImago Team



Melanie Ortiz 2 years ago

SCImago Team

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Best Regards, SCImago Team

T

Thamer Hameed Reja 2 years ago

Hello all,
Hope this finds you well, I have published research paper in Eurasia J Biosci 14, 4689-4695 (2020), and when I contact scopus to add my research paper on scopus database, I have been informed that the journal is currently being investigated to add any content and when open journal home page i found phrase (has ceased publishing, i appreciate if you assist me.and that the message from scopus
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Thank you for contacting Scopus regarding article: Impact of potassium sulphate and naphthalene acetic acid spray on yield and fruit quality of date palm cv. Barhee

Sorry for the inconvenience caused. Unfortunately, The journal "EurAsian Journal of BioSciences" is currently being investigated to add any content further which will take approximately 2 months for the decision to be taken.

Hence I would request you to contact us after 2 months to assist you further.

Meanwhile, please let me know in case of any other assistance.

Thank you for your patience and understanding.

Kind Regards,
Sowkya.S
Content Service Desk
ELSEVIER

reply



Melanie Ortiz 2 years ago

SCImago Team

Dear Thamer,

Thank you for contacting us. Could you please expand a little bit on your request to SCImago?
Best Regards, SCImago Team

T **Thamer Hameed Reja** 2 years ago

Dear sir
I have an inquiry, why the Journal has ceased publication??

reply



Melanie Ortiz 2 years ago

SCImago Team

Dear Thamer,
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A **A.alghamdi** 2 years ago

Good morning staff of EurAsian Journal of BioSciences
we sent the manuscript to the journal, after that one person (Mrs Tatiana Belova/ support manager/ ORES Platform) told me the manuscript was accepted but he asked me 420\$ (USA), but some things is not clear. please help me.do you know Mrs Tatiana Belova? or you have any information ?

reply



Melanie Ortiz 2 years ago

SCImago Team

Dear A.Alghamdi,
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A **A almusawi** 2 years ago

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I would like to ask you about some journals didn't have a homepage on the Scopus website, but have a homepage in your site?

reply



Melanie Ortiz 2 years ago

SCImago Team

Dear Sir,

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Best Regards, SCImago Team

N **noor** 2 years ago

how much the fee of publication

and the date od publication ??

reply



Teacher 2 years ago

400 dollars



Melanie Ortiz 2 years ago

SCImago Team

Dear Noor,
thank you for contacting us.

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E

eman sameer 3 years ago

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عندي بحث اريد انشره في مجلتكم ماهي خطوات النشر
شكرا جزيلاً

reply

S

sathish 3 years ago

it is Scopus index now also ? and what is the cost?



Melanie Ortiz 3 years ago

SCImago Team

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Melanie Ortiz 3 years ago

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A

Ahmed Khudhair 3 years ago

What is the classification of this journal i mean Q2 or Q2 or Q3 or Q4... Thank you

reply



Melanie Ortiz 3 years ago

SCImago Team

Dear Ahmed, thank you very much for your request. You can consult that information in SJR website. Best Regards, SCImago Team

M

MUNA 3 years ago

Good day
may I know how long time from submitting a paper to get an acceptance letter? and how much the publication fee?
Thanks

reply



Melanie Ortiz 3 years ago

SCImago Team

Dear Muna,
thank you for contacting us.
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J

Jwan 3 years ago

Good morning staff of EurAsian Journal of BioSciences
we sent the manuscript to the journal, after that one person (Mrs Tatiana Belova/ support

manager/ ORES Platform) told me the manuscript was accepted but he asked me 420\$ (USA), but some things is not clear. please help me.do you know Mrs Tatiana Belova? or you have any information ?

please help me

thanks for response

best regards

 reply

W

Widya 2 years ago

Hi sir, how your publication in this journal? How publication fee?



Melanie Ortiz 2 years ago

SCImago Team

Dear Widya,
thank you for contacting us.
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

R

Raad M. Wafur Abdulrazzaq 3 years ago

Hi
please, can you answer me how can i find my published research, because i was searching in you Journal issue 13 ,2, pages 695 to 700 (2019) i was find another paper in the same pages(not my) and there is no issue 13, just issue 13,1,2 from Jan.to Dec.2019(no. 2 still in progress),please you can see the attachment file
with my sending message to you,please tell me.Thanks
best regards
prof.Dr.Raad M.Wafur Abdulrazzaq
raadalsadon@yahoo.com

 reply



Melanie Ortiz 3 years ago

SCImago Team

Dear Raad,
thank you for contacting us.
Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you to contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

A

azim ahmadi 4 years ago

Greetings and Regards
An article titled
Evaluation of stress tolerance indexes with morpho-physiological traits in a number of advanced genotypes of lentil (*Lens culinaris*) under rainfed and low irrigation conditions

I've been sent for 2 months ago
Thank you if you accept
With respect

azim ahmadi

 reply



Elena Corera 4 years ago

SCImago Team

Please, contact EurAsian Journal of BioSciences, you are contacting Scimago Journal and Country Rank.

Best,
SCImago Team

F

Fatemeh Sistani 4 years ago

Hello, Could you explain about this journal that is an ISI journal please?

← reply



Elena Corera 4 years ago

SCImago Team

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G

Ghorbani 4 years ago

Hi Dear
Is this journal ISI?
Thanks a lot.

← reply

G

Ghorbani 4 years ago

Hi Dear
Is this journal ISI indexed?
Thanks.

← reply



Elena Corera 4 years ago

SCImago Team

Dear Ghorbani, SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR. Check our page to locate the journal. We suggest you consult the Journal Citation Report for other indicators (like Impact Factor) with a Web of Science data source. Best Regards, SCImago Team

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Relationship between gradation density of biofilm bacteria with tonsillar hypertrophy on patients with chronic tonsillitis

Muhtarum Yusuf ^{1*}, Kamal Anshari ¹, Boedy Setya Santoso ¹

¹ Department SMF of Medical Sciences Otolaryngology, Faculty of Medicine, Universitas Airlangga - Dr. Soetomo Regional Public Hospital, Surabaya 60131, INDONESIA

*Corresponding author: muhtarumyusuf@yahoo.co.id

Abstract

Background: Tonsillar hypertrophy, which is an indicator of tonsillectomy, is less accurate in making indications, so more specific indicators are needed. In chronic tonsillitis, biofilm bacteria are found which can cause antibiotic resistance. The presence of biofilm bacteria in chronic tonsillitis causes antibiotic drugs to not work properly, which is indicated to be the cause of delayed recovery in chronic tonsillitis. **Purpose:** Knowing the relationship between the gradation of biofilm bacterial density and tonsillar hypertrophy in patients with chronic tonsillitis. **Method:** This study was an observational analytic study with a cross-sectional study design. All patients with chronic tonsillitis who undergo tonsillectomy were selected by consecutive sampling. Gradations of tonsillar hypertrophy and bacterial biofilm were examined by scanning electron microscopy (SEM). **Result:** The results of biofilm density gradation from 26 samples obtained grade 0 results of 1 (3.85%) patient with T2 tonsils, class 1 as many as 1 (3.85%) patient with T2 tonsils. Class 2 were 2 (7.69%) patients with T2 tonsils and 3 (11.54%) patients with T3 tonsils. Class 3 were 1 (3.85%) patient with T2 tonsils, 7 (26.92%) patients with T3 tonsils and 1 (3.85%) patient with T4 tonsils. Class 4 (biofilms > 76%) as many as 2 (7.69%) patients with T3 tonsils and 8 (30.76%) patients with T4 tonsils. **Conclusion:** There is a relationship between the gradation of biofilm bacterial density and tonsillar hypertrophy in patients with chronic tonsillitis. The higher the gradation density of biofilm bacteria, the higher the gradation of tonsillar hypertrophy.

Keywords: chronic tonsillitis, tonsillar hypertrophy, density gradation of biofilm bacterial, scanning electron microscopy

Yusuf M, Anshari K, Santoso BS (2020) Relationship between gradation density of biofilm bacteria with tonsillar hypertrophy on patients with chronic tonsillitis. *Eurasia J Biosci* 14: 3175-3179.

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INTRODUCTION

Tonsillar hypertrophy has been used as one of the main indicators of tonsillectomy, but some clinical experience has shown that subsequent evaluation of tonsils has diminished with conservative therapy. This fact informs that tonsillar hypertrophy is less accurate in determining indications of tonsillectomy, therefore more specific indicators are needed (Brodsky, 2001. Bista, et al. 2005). Chronicity from tonsillitis can occur due to sufferers often experience Acute Respiratory Infections (ARI) or acute tonsillitis that is not treated adequately.

Electronic medical record (EMR) data on Outpatient Unit of the ear nose, throat, head surgery (ENT-TH) Dr. Soetomo regional public hospital Surabaya based on the international classification of diseases-10 (ICD-10) in 2013-2015, states that there were 141 new chronic tonsillitis patients, only 80 patients or 56.7% who underwent tonsillectomy surgery in the same year period. This data shows that tonsillectomy has not yet become a therapeutic choice for sufferers. One feature

of chronic tonsillitis is enlargement or hypertrophy of the tonsils (Brodsky, 2001).

Recent research shows that there are deposits of biofilm bacteria in infected tonsillar tissue. Biofilm itself consists of microbial cells and extracellular polymeric substance (EPS), which generally have a size of 5-500 μm (Agrippina, Widiyanti, & Yusuf, 2017. Kriswandini, et al. 2019). These biofilm bacteria presence indicates the basis of the chronic pathophysiology mechanism of tonsillitis (Ciftci, et al. 2014. Chole, & Faddis, (2003). The presence of biofilm bacteria plays an important role in the pathophysiology of chronic tonsillitis (Ciftci, et al. 2014. Chole, & Faddis, 2003. Alasil, et al. 2013). Biofilm bacteria can be 1000 times more resistant to antibiotics compared to free-living bacteria. Biofilm bacteria play a major role in chronic tonsillitis which is considered as

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Printed: September 2020

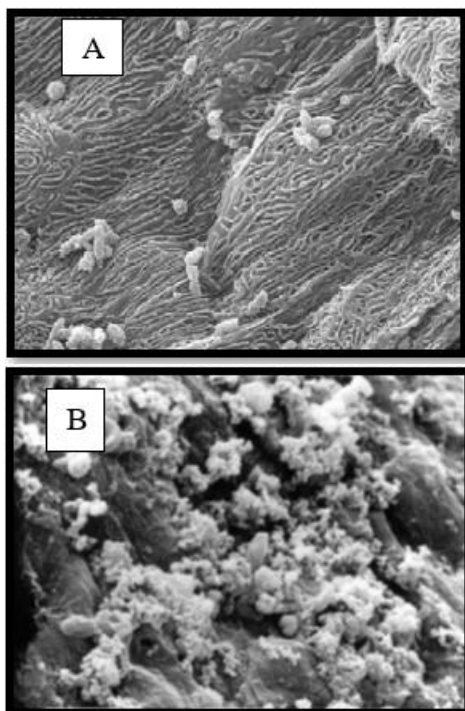


Fig. 1. SEM Examination; A. Negative Biofilm; B. Positive Biofilm

one of the most common pathologies found in children. Although the use of antibiotics is quite extensive, the recurrence of tonsillitis is still common (Alasil, et al. 2013; Sami, & Marin, 2017). The growth of biofilm bacteria will cause chronic infections which are characterized by inflammation and persistent tissue damage. The chronic infection persists will still be present despite antibiotic therapy had already done (Alasil, et al. 2013). Based on this, it is necessary to know the relationship between the presence of biofilm bacteria and tonsillar hypertrophy. This study aims to determine the relationship between the density of biofilm bacteria with tonsillar hypertrophy in patients with chronic tonsillitis.

METHODS

This research is an observational analytic study with a cross-sectional approach with a sample of 26 cases. Biofilm bacteria from tonsillar tissue were seen and validated using scanning electron microscopy (SEM) with a magnification of 2500 times. Tonsil tissue examined was in the form of fresh tissue (immediately after surgery) or a maximum of 72 hours after the surgery process with 2% glutaraldehyde fixation solution media at 4°C. On the SEM examination, it is determined whether there are bacterial biofilms or not. Biofilm is negative (-) if there are no biofilm bacteria and biofilm is positive (+) if there are bacterial biofilms as in **Fig. 1**.

Examination of biofilm bacterial density gradation at 150 times magnification is divided into several classes, namely class 0 if there is no biofilm, class 1 if there is

Table 1. Interpretation of correlation coefficients

Coefficients Interval	Relationship Level
0,00-0,199	Very Low
0,20-0,399	Low
0,40-0,599	Medium
0,60-0,799	Strong
0,80-1,000	Very Strong

Table 2. Assessment of Tonsil Hypertrophy Gradation Results

Tonsil Hypertrophy gradation	Amount	Percentage (%)
T1	0	0,00
T2	5	19,23
T3	12	46,15
T4	9	34,62
Total	26	100,00

<25% surface covered by biofilm, class 2 if there is 26-50% of the surface area covered by biofilm, class 3 if there is 51-75% of the surface is covered by biofilm, and grade 4 if 76-100% of the surface is covered by biofilm. Tonsillar hypertrophy gradations are classified based on previous studies, T0 if the tonsils are located in the tonsillar fossa, T1 if the proportion of tonsils to the oropharynx is <25%, T2 if the proportion of tonsils to the oropharynx is 25-50%, T3 when the proportion of tonsils to the oropharynx is 50-75%, and T4 if the proportion of tonsils to the oropharynx is > 75% (1).

Data presented and displayed in the form of distribution and frequency of hypertrophy gradations of patients with chronic tonsillitis and the results of the detection of bacterial biofilms. The type of statistic used is the Spearman test with $p < 0.05$. The strength of the relationship is determined based on the correlation coefficient which can be seen in **Table 1**.

RESULT

In this study, the youngest age was 4 years and the oldest age was 24 years. The average age is 11.96 years. Age distribution of patients is 6-10 years old, as many as 10 (38.46%) patients. Male sex distribution recorded at 16 (61.54%) patients and 10 (38.46%) patients for the female. The ratio of men to women is 1.6: 1. The main complaint is the throat pain as many as 9 (34.62%) sufferers, followed by the throat blocking which was recorded at 7 (26.92%) sufferers, snoring 4 (15.38%) sufferers, nasal 3 (11.54%) sufferers, difficulty swallowing (dysphagia) 2 (7.69%) sufferers, and bad breath 1 (3.85%) sufferers.

The examination of tonsillar hypertrophy gradation is done before tonsillectomy. **Table 2** shows the results of the examination of tonsillar hypertrophy gradations in patients with chronic tonsillitis and are categorized into T1, T2, T3, and T4. The results of gradual assessment of tonsillar hypertrophy obtained T2 results in 5 (19.23%) patients, T3 in 12 (46.15%) patients, T4 in 9 (34.62%) patients, no patients were included in the T1 category. The results of bacterial biofilms examination from tonsillectomy surgery tissue using SEM shown in **Table**

Table 3. Biofilm Bacteria Assessment Results

Biofilm Bacteria	Amount	Percentage (%)
Positif (+)	25	96,15
Negatif (-)	1	3,85
Total	26	100,00

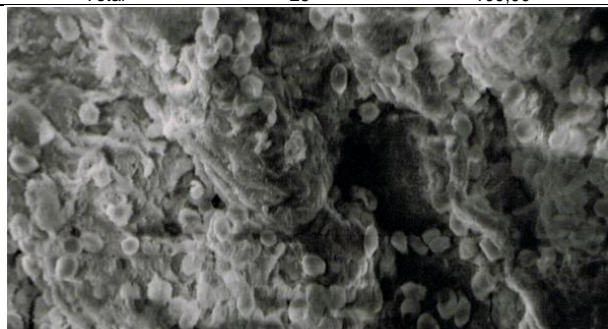


Fig. 2. The results of the examination of infected palatine tonsillar tissue using SEM with magnification 1000 times, obtained positive biofilm bacterial results. (1) Biofilm bacteria, which appear in the form of coccus which are piled and surrounded by EPS matrix; (2) EPS matrix indicates the presence of biofilms

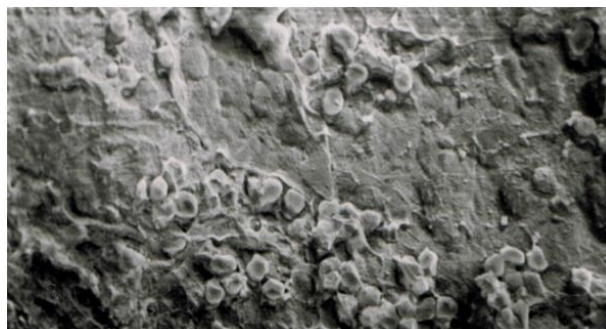


Fig. 3. The examination result of infected palatine tonsillar tissue using SEM with 1000 times magnification, negative biofilm bacteria results were obtained. (1) Coccus-shaped bacteria without biofilms; (2) Palatine tonsillar tissue

3. Results of examination of 26 tonsillectomy surgery tissues using SEM obtained positive biofilm bacteria (+) in 25 (96.15%) tissues and negative biofilm bacteria (-) in 1 (3, 85%) tissue.

Examination results revealed that the biofilm bacteria were positive if the bacteria appeared to be concentrated in the interface area (usually between solid and liquid media) and surrounded by the EPS matrix.

Biofilms are characterized by a three-dimensional complex of bacteria enclosed in the self-producing extracellular matrix of polysaccharides, nucleic acids, proteins, and extracellular DNA (**Fig. 2**). The examination results stated that biofilm bacteria were negative if there was no EPS matrix obtained (**Fig. 3**).

The examination result of biofilm density gradations from tonsillectomy surgery tissue using SEM shown in **Table 4**. The results of 26 tonsillectomy surgery tissues using SEM obtained grade 0 biofilm density gradation in 1 (3.85%) tissue, class 1 in 1 (3.85%) tissue, class 2 in 5 (19.23%) tissues, class 3 in 9 (34.61%) tissues, and class 4 in 10 (38.46%) tissues (**Fig. 4**). The analysis

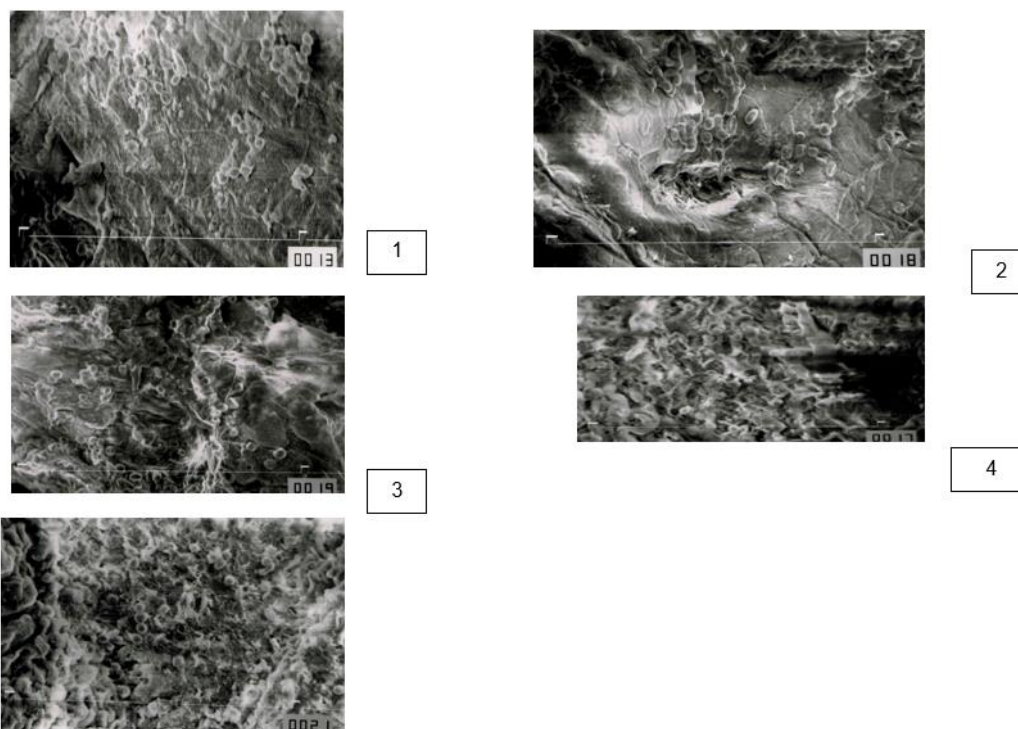


Fig. 4. Examination result of biofilm density gradation using SEM with a magnification of 150 times. (1) Class 0 does not have biofilms; (2) Class 1 recorded at <25% of the surface is covered with biofilm; (3) Class 2 recorded at 26-50% of the surface covered by biofilm; (4) Class 3 at 51-75% of the surface is covered by biofilm; (4) Class 4 at 76-100% of the surface is covered by biofilm

Table 4. The Density of Biofilm Gradation Assessment Results

Biofilm Gradation	Amount	Percentage (%)
Class 0	1	3,85
Class 1	1	3,85
Class 2	5	19,23
Class 3	9	34,61
Class 4	10	38,46
Total	26	100,00

Table 5. The Analysis Result of The Relationship of Biofilm Bacterial Density Gradation with Tonsillar hypertrophy

Tonsillar Hypertrophy Gradation	Biofilm Density Gradation					Total
	0	1	2	3	4	
T2	1 20,0%	1 20,0%	2 40,0%	1 20,0%	0 0,0%	5 100%
T3	0 0,0%	0 0,0%	3 25,0%	7 58,3%	2 16,7%	12 100%
T4	0 0,0%	0 0,0%	0 0,0%	1 11,1%	8 88,9%	9 100%
Total	1 3,8%	1 3,8%	5 19,2%	9 34,6%	10 38,5%	26 100%

results of the relationship of biofilm bacteria from tonsillectomy surgery tissue using SEM and tonsillar hypertrophy gradations on 26 patients with chronic tonsillitis shown in **Table 5**.

The results of statistical analysis with the Spearman test obtained a significance value of 0,000 <0.05 and a correlation coefficient of 0.795. Based on these results, there is a strong positive relationship between biofilm bacterial density gradation with tonsillar hypertrophy in patients with chronic tonsillitis ($p < 0.05$). The higher the gradation density of biofilm bacteria, the higher the gradation of tonsillar hypertrophy (**Fig. 5**).

DISCUSSION

Significant differences of biofilm bacterial density gradation between recurrent tonsillitis and the control group indicate that biofilms can be inside the tonsils without causing obvious symptoms so that greater biofilm development is needed to cause symptoms of an infection (Homenta, 2016). Previous studies using light microscopy and transmission electron microscope

(TEM) to examine 19 tonsils, tissues were taken through tonsillectomy to overcome previous recurrent infections or alleviate airway obstruction due to hypertrophy. Amorphous polysaccharide matrices and biofilm bacteria were found in tonsillar crypts on 11 of the 15 infected tonsils and bacteria found in smaller groups of 3 hypertrophic tonsils (Chole, & Faddis, (2003).

In a more recent study, a confocal laser scanning microscope (CLSM) with multiple fluorescence staining was used to examine 24 tonsils taken from children with previous chronic or recurrent tonsillitis and obtained bacterial biofilms in 17 of 24 specimens (70.8%). Biofilm bacteria are shown in most patients with chronic acute respiratory infections that fail to be treated aggressively. Streptococcus pyogenes infection that fails to be treated with antibiotics can be associated with biofilm formation (Bakaletz, 2012). Other studies that support the results of this study, found that biofilm bacteria act as a reservoir in causing persistent infections that cause enlargement or hypertrophy of the tonsils (Alasil, et al. 2013). Symptoms that indicate biofilm bacteria are hoarseness, hypertrophy of the tonsils and adenoids, obstructive sleep apnea, and cervical adenopathy (Diaz, et al. 2011).

The results of this study are also supported by other studies on different organs which show that the high density of biofilm bacteria (grades 3 and 4) is significantly proportional to the severity of symptoms and sufferers or patients of chronic rhinosinusitis (Atay, et al. 2013). Other studies that support the results of this study indicate that there are bacterial biofilms in pediatric patients with chronic exacerbation of chronic tonsillitis. Tonsillar hypertrophy gradations are important indicators of the presence of biofilm bacteria, but they have not been able to answer whether biofilm bacteria are a causative factor or a consequence of chronic exacerbation chronic tonsillitis (acute exacerbation tonsillitis. Torretta, et al. 2013).

Biofilm bacteria found in all tonsillar hypertrophy confirms that tonsillar hypertrophy is one of the

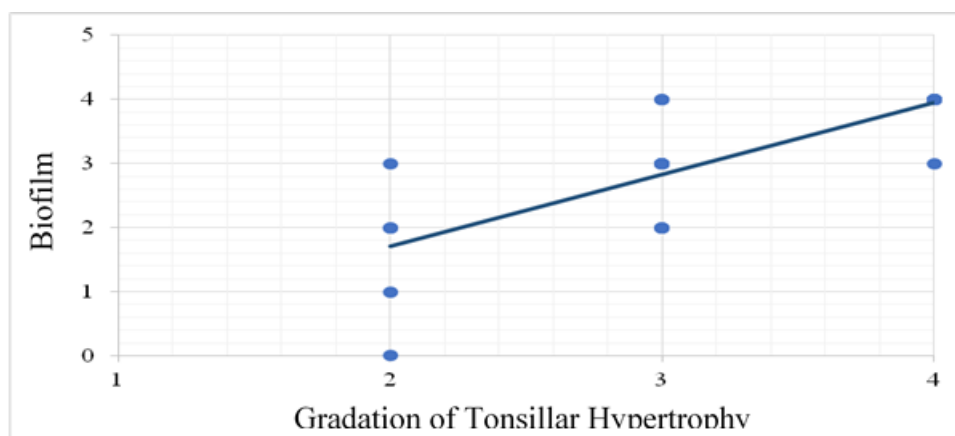


Fig. 5. The curve of the relationship between biofilm bacterial density gradation with tonsillar hypertrophy in patients with chronic tonsillitis

important symptoms associated with the presence of biofilm bacteria. In tonsillar hypertrophy, there is an increase in the number of lymphatic follicles related to the presence of bacterial biofilm infection. Biofilm bacteria have too large structures to be swallowed by host macrophages, consequently, the presence of biofilm bacteria in the tonsils will disrupt the normal functioning of the tonsil lymphatic tissue, causing chronic or recurrent infections (Alasil, et al. 2013). The density of biofilm bacteria in the SEM examination material can be determined based on the presence of clusters and towers embedded in the EPS matrix with a diameter of 0.5-2 μm attached to the surface. Grading is made based on the maximum visible field with a magnification of 75-150x which is equivalent to 12.25 mm² area (Atay, et al. 2013).

Based on the data in this study, tonsillar hypertrophy in the T3 and T4 categories in patients with chronic

tonsillitis strengthens the indication for tonsillectomy. This is because the biofilm bacterial density gradation at the size of the tonsils is relatively high, can be a cause of failure of medical therapy. While the T2 category or smaller still does not have a strong indication of tonsillectomy because the biofilm bacterial density is still relatively low.

CONCLUSION

There is a strong positive association or relationship between the gradation of biofilm bacterial density and tonsillar hypertrophy in patients with chronic tonsillitis. The higher the gradation of biofilm bacterial density, the higher the gradation of tonsillar hypertrophy. High bacterial density in grades 3 and 4 is also directly proportional to the severity of tonsillitis.

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