To Commemorate The 64th Anniversary of The Faculty of Dentistry
Universitas Gadjah Mada, Yogyakarta, Indonesia

The 2nd International Joint Symposium
on Oral and Dental Sciences
In Conjunction with Dental Specialists Seminar

March 1-3, 2012
Hotel Inna Garuda Yogyakarta, Indonesia

http://ijm2012.ugm.ac.id
Proceeding Book

The 2nd International Joint Symposium on Oral and Dental Sciences

Featuring:

Next Generation of Regenerative Therapies in Dentistry

In Commemoration with

The 64th Anniversary of The Faculty of Dentistry Universitas Gadjah Mada, Yogyakarta, Indonesia

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Program Book and Proceeding Book of the Symposium Can Be Downloaded from:

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It is great pleasure to invite you to “The 2nd International Joint Symposium on Oral and Dental Sciences”. The event is held to commemorate the 64th anniversary of The Faculty of Dentistry, Universitas Gadjah Mada, which has been serving as an academic institution concerning oral and dental sciences to community. This symposium is the continuation of the first fruitful meeting in Bali (2010).

Current clinical technologies, in terms of regenerative medical therapies related to organ transplantation and artificial organ, have been excellent life-saving and life-extending therapies to treat patients who need to reconstitute diseased or devastated organs or tissues as a result of an accident, trauma, and cancer, or to correct congenital structural anomalies. In this context, tissue engineering and DDS (drug delivery system) technology are considered fast growing approaches that play important roles in periodontology, implantology, oral and maxillofacial surgery, and other oral and dental treatments.

We are proudly present world leading scientists and clinicians in the area of tissue engineering and DDS technology, as well as on oral and dental sciences. We will bring together the international community of persons engaged or interested in the field of oral and dental sciences and promotes education and research within the field of oral and dental sciences. We provide a platform where international research colleagues, especially young ones, can share the latest results of research, discuss problems, and envisage a new horizon of oral and dental sciences.

It is a significant platform for the fostering of interactions among scientists, clinicians, and those engaged with funding, regulatory and commercial endeavors. This is a unique opportunity for all stake holders in this exciting field to come together in the beautiful city of Yogyakarta to promote the worldwide advancement of oral and dental sciences; in particular the integration of advanced technologies and clinical needs in our region.

We would like to welcome you in Yogyakarta.

Sincerely,

Dr. drg. Ika Dewi Ana
Chairperson of the Symposium
Address from the Chairperson of The 64th Anniversary of the Faculty of Dentistry, Universitas Gadjah Mada

Dear Symposium Guest Speakers and All Participants,

Welcome to the Symposium which is held as a part of the programs to commemorate The 64th Anniversary of The Faculty of Dentistry, Universitas Gadjah Mada.

Scientific communication in the international level among researchers is important to share knowledge, technology, and to keep in touch with updated progresses in oral and dental sciences. The First International Joint Symposium was held by Universitas Gadjah Mada in collaboration with The University of Tokushima (Japan) and Niigata University (Japan). The first symposium was held in conjunction with “Scientific Meeting on Implant and Aesthetic Dentistry for Next Generation of Dental Therapy” on December 15-18, 2010 in Kuta, Bali, Indonesia. The symposium attracted general practitioners and academicians not only from Indonesia and Japan, but also from Malaysia, Netherlends, Hongkong, and South Korea. Besides having fruitful and productive discussions on the state of the art of oral and dental research, progresses in educational systems among the country involved, participants were able to enjoy dental and medical technology exhibition.

Considering the above driving forces and the uniqueness of the country in relation to researches in dental sciences, the committee of The 64th Anniversary of The Faculty of Dentistry Universitas Gadjah Mada would like to facilitate it by holding The Second International Joint Symposium on Oral and Dental Sciences in Conjunction with Dental Specialist Seminar. This forum is hoped to be a starting point to expand scientific activities and scientific collaborations between the Faculty of Dentistry, Universitas Gadjah Mada, international collaborators, industries (business institutions), alumni, and community (government).

Aside from the above activities, we have been coordinating some events such as: Mini Lecture on Bone Graft (October 25, 2012), National Students Scientific Writing Competition and Dentistry Olympiad (November 21-27, 2012), Alumni Meeting (December 10, 2012) and some other cultural events. By holding the events, we would like to facilitate the co-creation among faculty members and supporting staffs of The Faculty of Dentistry as mentioned in our anniversary theme: Co-creation towards Academic Excellence.

We hope you all to enjoy the programs of the anniversary and enjoy fruitful discussion during the symposium.

Sincerely,

Prof. Dr. drg. Haryo Mustiko Dipoyono, SpProst(K).
Chairperson of The 64th Anniversary Committee
Address from the Dean of The Faculty of Dentistry,
Universitas Gadjah Mada

Dear Honorary Guests and Symposium Participants,

It is our great pleasure to welcome you in The 2nd International Joint Symposium on Oral and Dental Sciences, which is held in commemoration with The 64th Anniversary of The Faculty of Dentistry, Universitas Gadjah Mada.

As mentioned in its Strategic Plans (2008-2012), Universitas Gadjah Mada (UGM) has its vision to be a World Class Research University which is excellent, independent, dignified, inspired by Pancasila, the five-basic principles, and dedicated to the needs and welfare of the nation and the world. The vision is done by UGM mission: To promote excellent teaching-learning opportunities and community service through research, with its special mission on research: To promote excellence in educational activities, research, and community service with the interest of the Indonesian society and to participate in Indonesian socio-cultural building.

Faculty of Dentistry should play significant roles towards the vision of the university. For this, research (scientific activity) indeed is one of important factors towards the vision. This symposium is dedicated to encourage faculty members, clinicians and practitioners, as well as alumni to contribute more to scientific knowledge.

We hope the success of the symposium and the overall programs to commemorate The 64th Anniversary of The Faculty of Dentistry Universitas Gadjah Mada. We do hope the advancement in education, research and community services will be achieved in near future by our synergy.

Sincerely,

Prof. Dr. drg. Iwa Sutardjo RS., SpKGA(K).
Dean of The Faculty of Dentistry
Universitas Gadjah Mada
# The 64th Anniversary of the Faculty of Dentistry, Universitas Gadjah Mada

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4. Vice Dean for Administration and Human Resources Development  
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EFFECT OF SEVERITY SMOKING ON THICKNESS OF GINGIVAL EPITHELIUM

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Abstract

Smoking is one of the most important risk factor for oral diseases. Gingival protects underlying tissue. The thickness of oral mucosa epithelium is related with the amount of cell or proliferation activity. This study was aimed to investigate effect of severity smoking on thickness of gingival epithelium. This study used males Rattus Norvegicus strain Spraque Dawley, and were divided in 4 groups. They were control, mild, moderate and severe smoker. The animal models were euthanized with ketamine in the 12th day. Gingival epithelium thickness was measured from basale layer to granular layer in 3 sites. The results were analyzed by one way anova. The result of this research showed there was increasing thickness of gingival epithelium of animal models. The conclusion of this study showed that severity smoker influenced the gingival epithelium thickness.

Key words: smoking, mild smoker, moderate smoker, severe smoker, thickness of gingival epithelium

Introduction

World Health Organization shows 31.5\% Indonesian are smokers. This is meant that about 60 million people are smokers. Smoking causes death about 6 people per minute [1]. Smoking is also one of the most important risk factor for oral diseases, such as periodontal disease [2].

Tobacco smoking contains three kinds the most dangerous of chemical materials. They are tar, nicotine and carbon monoxide. The chemical materials are absorbed by oral mucosa directly [3]. Tobacco smoking can disturb collagen metabolism, differentiation and migration of keratinoctye in periodontal tissue, especially gingival.

Gingival protects underlying tissue to oral environment. Gingival is structured by epithelium with keratinized, especially orthokeratinized and parakeratinized [4]. Tobacco smoking is as exogen factor can influence keratinized process [5]. Daniels describes there are an increased thickness of oral mucosa epithelium in smoker. The thickness of oral mucosa epithelium is related with the amount of cell or proliferation activity [6]. The severity of periodontal disease is directly related to the amount of smoking or number of cigarettes smoked per day [7]. This study was aimed to investigate effect of severity smoking on thickness of gingival epithelium.

Materials and Methods

This study was approved by ethical commission of Faculty of Dentistry Gadjah Mada University. All of animal models were adapted on new environment for a week. This study used 20 male rats of Sprague Dawley strain. The samples were divided into 4 groups. They are control, low smoker (2 g/ day), moderate smoker (4 g/ day) and severe smoker (8 g/ day) and exposed for 10 days. The gingival of lower incisors region were exposed 2 grams/ exposed by chip blower. The samples were euthanized with ketamine in the 12th day. After sacrificed, the gingiva specimen obtained from the lower incisors region, were washed by water and then fixed in 10\% phosphate buffered formalin pH 7.4. After
alcohol dehydration, the gingiva specimens were embedded in paraffin. Measurement of gingiva epithelium thickness use hematoxylin eosin that is measured from basale layer to granular layer and 3 sites (in μm). The results are analyzed by one way anova.

Results

The results of gingival epithelium thickness measurement were showed in table 1.

Table 1. Mean and Standard Deviation Gingival Epithelium Thickness Measurement in Smoker and Non Smoker Rats for 10 Days Exposures (μm)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Lower</th>
<th>Moderate</th>
<th>Severe</th>
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<tbody>
<tr>
<td>Mean</td>
<td>1.88 ±</td>
<td>3.71 ±</td>
<td>4.14 ±</td>
<td>5.68 ±</td>
</tr>
<tr>
<td>SD</td>
<td>0.27</td>
<td>0.22</td>
<td>0.19</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Table 1 showed that gingival epithelium thickness increased following by increasing severity of smoking. The highest of gingival epithelium thickness was in severe smoker groups that exposed for 10 days, and the lowest was in control groups that exposed for 10 days.

The result of two Way Analysis Variance (Anova) test showed there was significant different between groups. The statistic analysis was continued by Least Significant Differences (LSD) to know probability of effect of severity smoking in gingival epithelium thickness between each group.

Table 2. Summary of LSD Test of Gingival Epithelium Thickness Measurement

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean difference</th>
<th>Sig</th>
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<tr>
<td>Control vs Lower</td>
<td>-1.83600</td>
<td>0.000*</td>
</tr>
<tr>
<td>Control vs Moderate</td>
<td>-2.26400</td>
<td>0.000*</td>
</tr>
<tr>
<td>Control vs Severe</td>
<td>-3.79800</td>
<td>0.000*</td>
</tr>
<tr>
<td>Lower vs Moderate</td>
<td>-0.42800</td>
<td>0.028*</td>
</tr>
<tr>
<td>Lower vs Severe</td>
<td>-1.96200</td>
<td>0.000*</td>
</tr>
<tr>
<td>Moderate vs Severe</td>
<td>-1.53400</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Explanation:
* : significant difference

The result of LSD test of effect of smoking in gingival epithelium thickness showed that there were significant different of gingival epithelium thickness measurement between groups.

Microscopic examinations of gingival epithelium were showed in figure 1 by 400x magnification.

(a) (b) (c) (d)

Fig 1. Microscopic examination of gingival epithelium thickness in control (a), lower smoker (b), moderate smoker (c), and severe smoker groups for 10 days exposure. Arrow sign is width of thickness (400x).

Figure 1 showed that thickness of gingival epithelium in severe smoker is thicker than another.

Discussion

Based on the result of research, there was increasing of gingival thickness. The highest gingival thickness was in severe smoker groups that are exposed for 10 days. It was showed cell proliferation in gingival epithelium of severe smoker is more than the other groups. Smoking was associated with severity of periodontal disease and gingival epithelium proliferation.

Smoking can increase thickness of gingival epithelium. Increasing of gingival epithelium thickness was caused by keratinocyte proliferation. Chemical substance in smoking influenced proliferation degree of cell in gingival [8]. Heat and poisonous component from smoking caused cell morphology changing, especially cell in oral mucosa. Stimulation of smoking would be in long time and continuously. Stimulation of smoking caused cell will make adaptation process. The adaptation process in this study was increasing of gingival epithelium thickness and activity of cell...
proliferation. Hilman and Kissin showed that smoking habits can change normal cytology of oral mucosa. The changing liked increasing of nucleus size, cell size and number of para-cornification cell, and number of cornification cells [9].

Smoke stimulation for long time can cause thickening of oral epithelium. Amount and duration of smoking were important factor for determining of hyperkeratinization degree and characteristic. Heavy smokers might have grayish discoloration and increasing number of keratinocyte cells in their gingival [3].

Conclusions

The severity smoking can be effect on thickness of gingival epithelium. Gingival epithelium in severe smoker is thicker than another.

References