Curcumin inhibits mitochondrial swelling
Cytotoxic assay secondary metabolite
Restricted diet effect on leptin receptor
Local immune on HUVECs treated with *P. Falciparum* & TNF-α
Excessive EDTA effect to the RBC parameter
COPD patient assessed using SGRQ and 6MWD
Consequence of hypertension to pulmonary vein
Job stressors and hypertension
Helicopter and noise-induced hearing loss
Implant on hyperthyroidism patient
The influence of hyperthyroidism on implant restoration treatment outcome

Muhandi Sjajja, Sleenawan Sleenawan, Netno NepoWSuwaNdari, Ira Tano

doi: http://dx.doi.org/10.13181/mji.v15i3.231

Abstract
# Medical Journal of Indonesia

## TABLE OF CONTENTS

Volume 15, Number 3, July - September 2006, pages 129-196, ISSN 0853-1773

### Basic Medical Research

| Authors                  | Title                                                                 | Page |
|--------------------------|----------------------------------------------------------------------|------|
| S. Susilowati            | The prevention of curcumin against rat liver mitochondrial swelling  | 131  |
| F.D. Suyatna             | induced by tert-butylhydroperoxide                                   |      |
| A. Setiawati             | Tert-butylhydroperoxide of 90 μM induces a typical 2-phase           |      |
|                          | mitochondrial swelling of                                          |      |
|                          | rat liver. Curcumin of 2.5 μM could inhibit the swelling induction   |      |
|                          | as much as 85 ± 3%.                                                 |      |
| P. Sudarmono             | Cytotoxic assay of endophytic fungus 1.2.11 secondary metabolites    | 137  |
| R. Utji                  | from *Brucea javanica* (L) Merr towards cancer cell in *vitro*       |      |
| L.B.S. Kardono           | This study find isolate endophytic fungus 1.2.11 that can           |      |
| S. Kumala                | produce secondary metabolite as anti cancer agents.                 |      |
| M.R. Indra               | The effect of four weeks restricted diet on serum soluble leptin    | 145  |
| W. Riawan                | receptor levels and adipocyte leptin receptor density in             |      |
|                          | normoweight ratus norvegicus strain Wistar                          |      |
|                          | Restricted diet 40% calorie for four weeks in rat caused             |      |
|                          | decreasing serum soluble leptin receptor level and increasing        |      |
|                          | leptin receptor density in adipose tissue.                           |      |
| L.E. Fitri               | Expression of inducible nitric oxide synthase, caspase-3 and        | 151  |
|                          | production of reactive oxygen intermediate on endothelial cells     |      |
|                          | culture (HUVECs) treated with *P. falciparum* infected erythrocytes |      |
|                          | and tumour necrosis factor-α.                                      |      |
|                          | This study suggest that cytoadherence of *P. falciparum* infected    |      |
|                          | erythrocytes and TNF-α treatment on endothelial cells can induce     |      |
|                          | activation of local immune marked by increase                       |      |
|                          | inducible nitric oxide synthase, increased expression of Caspase 3   |      |
|                          | and release of free radicals that cause cell damage.                |      |

### Clinical Research

| Authors                | Title                                                                 | Page |
|------------------------|----------------------------------------------------------------------|------|
| T. Ratnaningsih        | The effects of excessive *Disodium Ethylene Diamine Tetraacetic Acid* (Na₂EDTA) anticoagulant concentration toward hematoloy profile and morphology of erythrocytes in peripheral blood examination | 157  |
| U. Sukorini            | Excessive Na₂EDTA anticoagulant concentration will affect the blood specimen for peripheral blood examination of erythrocytes by interfering morphology and some of hematological parameters. |      |
| R.A. Gumilang          | The benefit of pulmonary rehabilitation against quality of life alteration and functional capacity of chronic obstructive pulmonary disease (COPD) patient assessed using St George’s respiratory questionnaire (SGRQ) and 6 minutes walking distance test (6MWD) | 165  |
| W.H. Wiyono            | Patients with COPD have been shown to benefit from pulmonary rehabilitation programs. Outcome with SGRQ and 6MWD before and after therapy showed that this program significantly improved quality of life and functional capacity in mild-to-moderate COPD patients. |      |
| J. Riyadi              |                                                                      |      |
| F. Yunus               |                                                                      |      |
| A. Ratnavati           |                                                                      |      |
| S. Prasetyo            |                                                                      |      |
| Y. Yuniadi             | Left ventricular hypertrophy are associated with increased ostial pulmonary vein diameter | 173  |
| R. Prakoso             | Pulmonary veins diameter is increased in hypertensive patients with evidence of left ventricle hypertrophy. It might be one explanation of high prevalence of atrial fibrillation in hypertensive patients. |      |
| E. Maharani            |                                                                      |      |
| B. Nagawiayya          |                                                                      |      |
| M. Munawar             |                                                                      |      |
Community Research

F. Krisnowati
B. Basuki
G. Nainggolan

Job stressors and other risk factors related to the risk of hypertension among selected employees in Jakarta
Moderate or heavy qualitative and quantitative job stressors as well as career development increased the risk of hypertension.

K. Hanum
H. Haksono
B. Basuki

Duration of works, flight hours, and blood pressure related to noise-induced hearing loss among Indonesian Air Force helicopter pilots
Total flight for 500 hours or more, total duration works of 11-24 years, or prehypertension and hypertension stage I increased risk noise-induced hearing loss (NIHL).

Case Report

S. Sidjaja
Soenawan
R. Pontjowulandari
I. Tanti

The influence of hyperthyroidism on implant restoration treatment outcome
Implant on edentulous patient with hyperthyroidism history is a compromised treatment. Scrutinized case selection, implant placement, and restorative construction should be done properly and carefully.

Medical Journal of Indonesia

Editor-in-Chief: Prof. dr. Abdul Bari Saifuddin, MPH; Deputy Editor-in-Chief: dr. Isnani A. Suryono, MS.
Editorial Board Members: Prof. Dr. Med. Ali Baziad; Prof. dr. Bastaman Basuki, MPH; dr. Djaja Surya Atmadja, PhD; Prof. dr. Jeanne Adiwinata Pwabitan, PhD; dr. Nafrialdi, PhD; dr. Radiana D. Antariantoro; Prof. Dr. dr. Sudigdo Sastrosmoro; dr. Rainy Umbas; PhD; Prof. dr. Santoso Comnain, DSc; dr. Septelina Inawati Wanandi, PhD; dr. Siti N. Setianingsih.

International Editorial Advisory Board: David H. Garabrant, MD, MPH (University of Michigan School of Public Health, Ann Arbor, Michigan, USA); Anthony S-Y Leong, MB, BS, MD, FRCPA, FRCPATH, FCPath, Honorary FHKCPATH, FHKAM (Pathol) (Hunter Area Pathology Service, Discipline of Anatomical Pathology, University of Newcastle, Australia); Noel McIntosh, MD, ScD (JHPIEGO / Johns Hopkins Program for International Education in Reproductive Health, Baltimore, USA); Yoshiyuki Ohno, MD, PhD, MPH (Labour Welfare Corporation Asoh-Rosai Hospital, Aichi, Japan); Prof. Yanto Lunardi-Iskandar, MD, PhD (University of Maryland, Baltimore, Maryland, USA); Prof. Ferry Sandra, DDS, PhD (IHVCUB-U / Institute of Human Virology and Cancer Biology, University of Indonesia, Jakarta, Indonesia); Prof. Steve J. Yang, PhD (Massachusetts Institute of Technology, Center for Biomedical Engineering, Cambridge, USA); Farrokh Habibzadeh, MD (EMAME / Chairman, Editorial Committee Eastern Mediterranean Association of Medical Editors, Iran).

Business Manager: dr. Hendra Utama; Executive Secretary: Lily Sasmito Notokusumo; Administrative Assistant: Maryati; Setting/Layout: Emiraldia, Ika Setiawati; Printed by Tridasa Printer

Subscription: The journal is published quarterly and may be subscribed at the rate of Rp 100,000 per annum. Other countries outside Indonesia: US$ 60 per annum.

Advertisement: Only advertisements of medical/scientific or related products will be allowed space in this journal. For all inquiries please contact the Medical Journal of Indonesia Editorial Office at Fakultas Kedokteran Universitas Indonesia, Jalan Salamala No. 6 Jakarta Pusat 10430, Indonesia; Tel (62-21) 3910551, 3906929, Fax (62-21) 3906940. Home page: http://www.look up.com/homepages/72413/mji.html/e-mail: med_jindones1@hotmail.com

STT: 2434/SK/DITJEN PPG/STT/1998; Accreditation: 111/Dikti/Kep/1998 (Ranking: A), 22/Dikti/Kep/2002 (Ranking: A), 26/DIKTI/Kep/2005 (Ranking: A)
The influence of hyperthyroidism on implant restoration treatment outcome

Suhandi Sidjaja, Soenawan, Retno Pontjowulandari, Ira Tanti

Abstract

There is limited information about bone implant restoration treatment on edentulous patient with hyperthyroidism. This clinical report is presenting the making of dental bone implant restoration on patient with hyperthyroidism history. A 60 years old male patient with hyperthyroidism came to Prosthodontic Clinic Faculty of Dentistry University of Indonesia to improve his ailing denture. After comprehensive evaluation we treated the patient with Implant-Tissue-Supported Overdenture (4 Implants) for rehabilitating upper edentulous jaw, and 2 Implant-Tooth-Supported Fixed Partial Dentures for rehabilitating Kennedy class II lower edentulous jaw respectively. Short term clinical and radiographic evaluation based on Buser’s criteria showed positive result. (Med J Indones 2006; 15:191-5)

Keywords: Hyperthyroidism, implant restoration.

There are several methods to replace missing tooth either with conventional dentures (fixed or removable) or implant dentures (STI=Single Tooth Implant, ISFPD=Implant Supported Fixed Partial Denture, ITSFPD=Implant Tooth Supported Fixed Partial Denture and IOD=Implant Overdenture). Conventional denture has limited indication and outcome quality, whereas implant denture provides advantage characteristics in function, stability, and comfort and can replace one to entire missing tooth as long as it is supported by healthy oral (bone quality and quantity) and general status. The outcome of implant restoration depends on many factors, such as, treatment designs (implant and prosthesis), clinical execution, laboratory quality, occlusion, and patient’s cooperativeness. Hyperthyroidism is an endocrine disease with excessive production of thyroxin in the thyroid gland, which causes a generalized increase in the metabolic rate of all body tissue, resulting in tachycardia, increased blood pressure, sensitivity to heat irritability, decrease in bone density and loss of some area of edentulous bone. Therefore bone implant treatment on edentulous patient with hyperthyroidism history is a compromised treatment due to bone condition (bone loss and osteoporosis). However when hyperthyroidism is under control, with normal thyroid function and no symptoms of disease within the past 6 months, a normal protocol may be used for all dental implant surgery and restorative procedures. The success rate of osseointegration phase is 97.8%. The purpose of this clinical report is to evaluate the outcome of implant restoration treatment on patient with hyperthyroidism history.

METHODS

A 60 years old male lecturer with upper edentulous and lower bilateral free end partial edentulous came to Prosthodontic Department clinic Faculty of Dentistry University of Indonesia, to improve his ill fitting dentures. Clinical and radiographic finding showed; patient wore unstable narrow upper acrylic full denture and double free-end acrylic lower denture;
excessive flabby mucosa on upper anterior and lower left posterior jaws; compromised bone quantity and quality on upper edentulous jaw; large occlusal space (distance is measured from upper ridge crest-lower occlusal surface), 15mm, 16mm and 11mm respectively on anterior, left, and right posterior. It was indicated from patient’s appearance that vertical dimension was reduced (Figure 1, 2, 3, and 4).

Figure 1. Before treatment (February 2004)

Figure 2. Upper and Lower old denture

Figure 3. Patient’s appearance in his old upper and lower denture

Figure 4. Patient’s profile in his old upper and lower denture
Treatment plans were based on comprehensive medical and dental review, which consisted of mucosa plasty for upper anterior and lower left posterior, Implant-Tissue-Supported Overdenture (four implants) and two Implant Tooth Supported Fixed Partial Dentures for upper and lower jaws respectively. Implant denture designs were based on stability, bone volume and quality, and patient’s financial status. Patient had been well-informed with the risks associated with the treatment and had given his consent to accept this treatment plans. Premedication for minor surgery was given prior to implant placement. Implants length, location, and direction were decided based on panoramic (Yoshida) and periapical (Asahi and Digore) radiographs, as well as study cast and clinical inspections. Osteotomy was performed according to Branemark’s standard and implant manufacturer instruction. Two root form implants were placed on regions of 35 and 36 on Nov 9,2004 (Figure 5); one root form implant was placed on region 46 on March 19,2005 (Figure 6); two root form implants were placed on region 23 and 27 on June 25, 2005 (Figure 7); two root form implants were placed on region 14 and 17 on August 6, 2005 (Figure 8); one PFM Implant-Tooth-Supported Fixed Partial Denture (33, 34, 35, 36) was constructed on February 4, 2005; and one PFM Implant-Tooth-Supported Fixed Partial Denture (44, 45, 46) was constructed on August 30, 2005 (Figure 9,10).

Figure 5. November 2004
Figure 6. Mei 2005
Figure 7. July 2005
Figure 8. August 2005
Figure 9. After treatment (2005)
Figure 10. Upper old full denture and lower new two ITSFPDs.
All superstructures were designed with minimum occlusal and lateral load. The upper old denture was modified and adjusted to 4 implant healing screws to act as temporary overdenture. The permanent overdenture was constructed on February 6, 2006, vertical dimension was increased 4 mm from the previous denture. Labial flange was thickened according to neutral zone. Low incline cusp, disclusion scheme was selected. Survival evaluation was performed according to Buser’s criteria.\(^5\)

**RESULTS**

After 3 and 6 months all implant-bone osseointegrations on lower and upper jaws, respectively, were successful (Figure 11). No signs of mucosal inflammation, altered sensation or other abnormalities were detected in all implants (Figure 12). Two lower PFM ITSFPD were well function up to the present day. The temporary and permanent overdentures showed improved stability and comfort, as well as facial and lip support (Figure 13, 14).

*Figure 11. After treatment (2006)*

*Figure 12. Four implant on upper jaw*

*Figure 13. Patient’s profile in his new upper and lower denture*

*Figure 14. Upper and lower new denture*
DISCUSSION

Bone implant treatment on edentulous patient with hyperthyroidism history is a compromised treatment.\(^1\) In this case hyperthyroidism is already under control, with normal thyroid function and no symptoms of disease within the past one year. The main problem of this patient was his difficulty in speaking due to unstable upper denture. As lecturer patient needs a stable denture by which he could speak clearly and fluently to the students. Excessive bone resorption and hypersensitivity on upper jaw were the reason for upper denture instability and inadequate retention.

Two ITSFPD were selected for lower jaw because of compromised bone volume, cost effectiveness, and high survival rate.\(^6\) The ITSFPD on posterior left and right lower jaw increases patient’s comfort on speaking and masticating, and reduces the bone resorption rate. Implant-Tissue-Supported Overdenture was selected for upper edentulous jaw instead of fixed denture or Implant-Supported Overdenture because of compromised bone quality and volume, cost effectiveness, in order to minimized vertical and lateral load, and to fulfill facial and lip support.

The upper Implant-Tissue-Supported Overdenture is a complex restoration, as well as compromising bone-implant stability due to bone resorption pattern, proximity to maxillary sinuses, and nasal cavity.\(^7,8\) Therefore scrutinized case selection is needed, and implant placement and restorative construction should be done properly and carefully. Low cusp inclined, disclusion, and shortened dental arch are important factors to minimize mastication force.

CONCLUSION

Short term clinical and radiographic evaluation based on Buser’s criteria shows good prognosis in implant restoration treatment on patient with hyperthyroidism history. The treatment plan and clinical execution was done carefully and properly. Further evaluation and study are needed for medium and long term prognosis.

REFERENCES

1. White SC, Pharoah MJ. Systemic Diseases Manifested in the Jaws. Oral Radiology Principles and Interpretation. 5th Ed. Mosby Inc. 2004: 522.
2. Fagan MJ, Ismail JYH, Meffert RM, Fagan MJ. Implant Prosthodontics. Surgical and Prosthetic Techniques for Dental Implant. Year Book Medical Publishers, Inc.1990 56-7.
3. Van Steenberghe D, Jacob R, Desnyder M, Maffei G, Quirynen M. The relative impact of local and endogenous patient-related factors on implant failure up to abutment stage Clin Oral Implants Res.2002;13(6):617-22.
4. Branemark PI, Zarb GA, Albrektsson T, Tissue-Integrated Prostheses: Osseointegration in Clinical Dentistry. Chicago; Quintessence Publishing Co;1985:211-4.
5. Buser D, Weber HP, Lang NP. Tissue integration of non-submerged implant. One year results of a prospective study with 100 ITI hollow-screw and hollow-cylinder implants. Clinical Oral Implants Research 1:33-40.
6. Sijaya S. The Efficiency of Implant Restoration Treatment. 19th. International Symposium of AOIA, Jakarta, 12-13 December 2003:1-4.
7. Zitzmann NU, Marinello CP. Treatment plan for restoring the edentulous maxilla with implant supported restorations: Removable overdenture versus fixed partial design. J Prosthet Dent 1999;82:188-96.
8. Hobo S, Ichida E, Carcia LT. Osseointegration and Occlusal Rehabilitation. Quintessence Publishing Company 1990. Tokyo, Berlin, Chicago, London, Sao Paulo, Hongkong: 60-2.