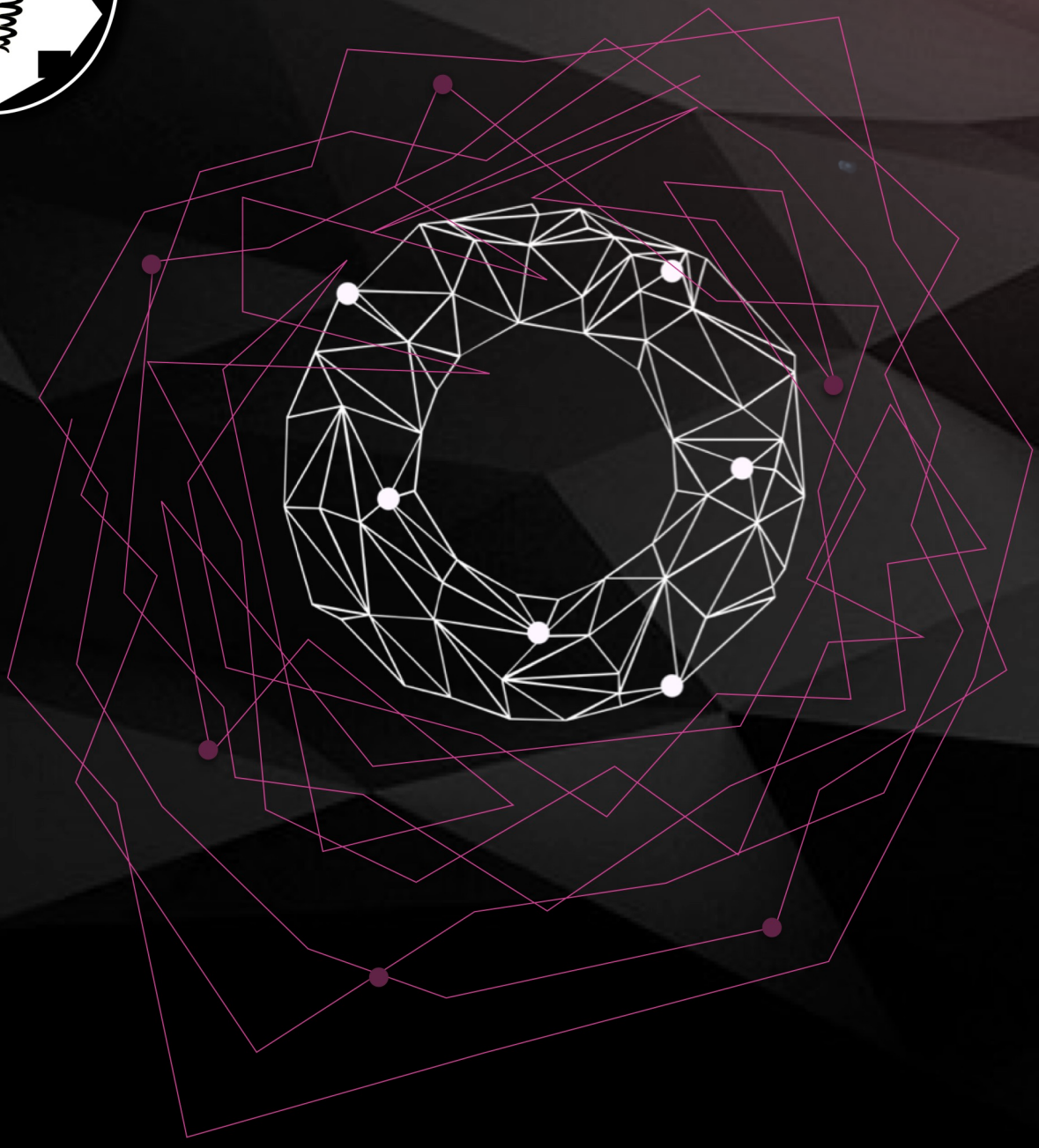
THE CLINICAL ACADEMIA



PRINTED IN THE USA

40 Years of The Clinical Academia
of our passion

We are in ASEAN Citation Index
We are in Group I of Thai-Journal Citation Index

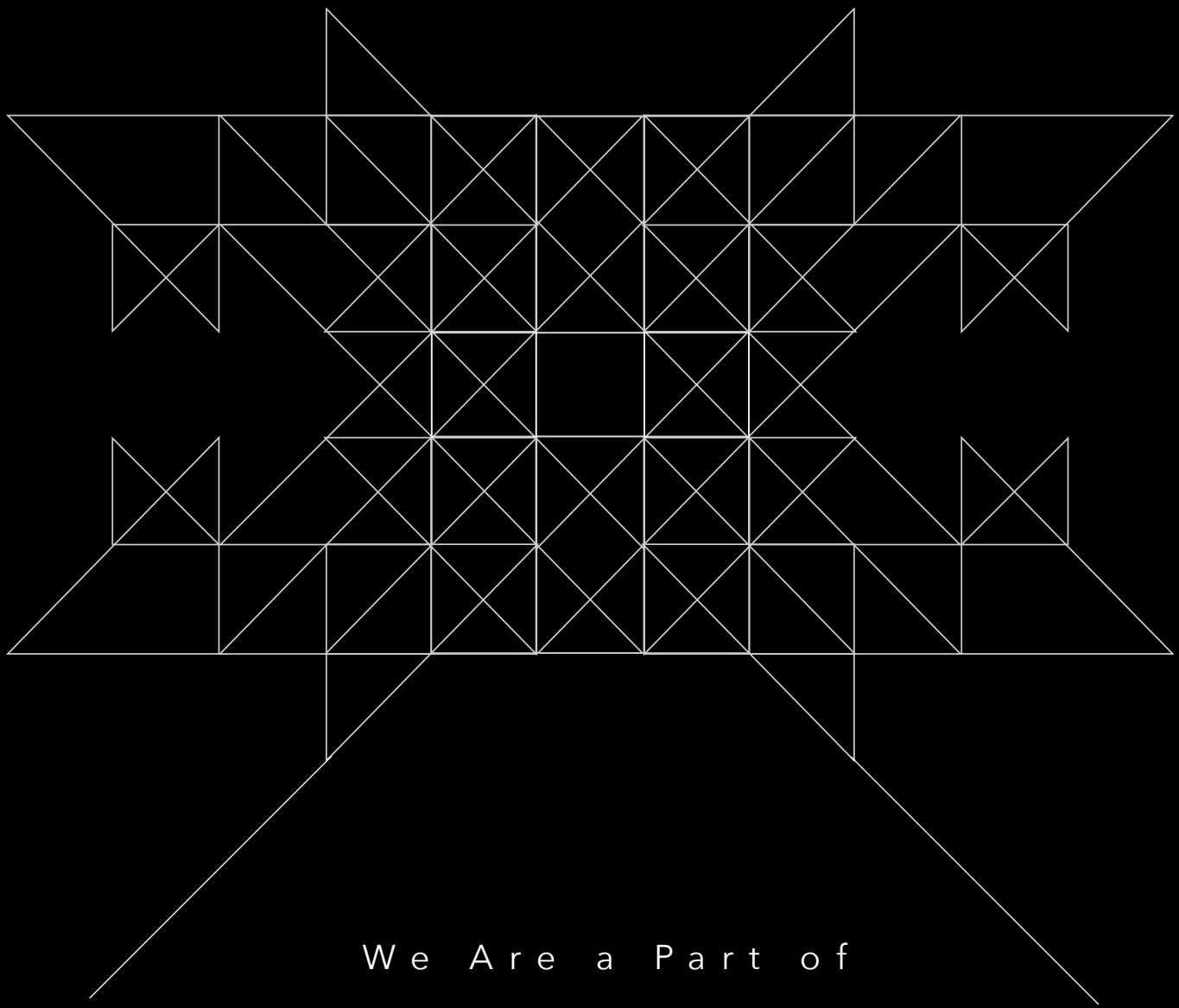
VOLUME 40 ISSUE 3
ISSN 2465-4027

www.theclinicalacademia.org
theclinicalacademia@gmail.com

We are the former Khon Kaen Medical Journal

We are now 40 years old.

the clinical academia



We Are a Part of

ASEAN Citation Index

the clinical academia

Own & Published by
The Medical Advancement Foundation & Khon Kaen Medical Education Center
Under the Patronage of
Khon Kaen Hospital
Thai Ministry of Public Health

THE ADVISORY BOARD ON PUBLICATION
Chanchai Janworachaikul, M.D.
Sirijit Vasanawathana, M.D.
Prasit Hanpinitsak, M.D.
Surachai Saranrittichai, M.D.

SENIOR ASSOCIATE EDITOR
Poj Sriboonlue, Professor
Thanachai Panaput, M.D., Ph.D.

EDITOR-IN-CHIEF
Thammasorn Jeeraaumponwat, M.D., Ph.D.

EDITORIAL BOARD
Suchada Paileeklee, Assoc. Professor, Ph.D.
Nongkran Lumjuan, Ph.D.
Kanokwan Sriruksa, M.D.
Benjaporn Silaruks, B.Pharm., Ph.D.
Kesinee Saranrittichai, Ph.D.
Pakarat Sangkla, M.D.
Tanin Titipungul

MANUSCRIPT EDITING
Ratchanee Praseerake

GRAPHIC ART
Thammasorn Jeeraaumponwat, M.D., Ph.D.

Material printed in the *Journal* is covered by copyright. No copyright is claimed to any work of the Thai government. No part of this publication may be reproduced without written permission. The *Journal* does not hold itself responsible for statements made by any contributors. Statements or opinions express in the *Journal* reflect the views of the author(s) and do not represent the official policy of the *Journal* unless stated.

message from the editor

We are 40, but we are still excited!

Since the dawn of 2016, our changes includes

(i) We publish every 2 months, 6 issues a year,

(ii) We publish in English only,

(iii) All submitted manuscripts will be checked for plagiarism using "turnitin"

(iv) Every randomized controlled trial has to declare "Clinical Trial Registry Number" together with documents related to its ethical approval.

Our passion to bring out the best in every research presented in this journal and deliver properly to our audiences is still going on. It would be no more or no less when we talking about medicine. The world of medicine always moves forward. Here now and then are its places. Keep going is the best suggestion for all of us. Gather the most of evidences before make any decisions, read between the lines to see the real information without bias. There is not thing such a panacea. Evidences are still needed for the maximum benefit of the mankind. Hope you enjoy reading *The Clinical Academia.*

submission

Please visit

www.theclinicalacademia.org

For online submission

reviewing process

All accepted articles are classified into four categories

"**CATEGORY I**" or "standard submission with minor changes" with the approximated processing time of 3-4 months.

"**CATEGORY II**" or "expression submission with minor editing" with the approximated processing time of 1-2 months.

"**CATEGORY III**" or "expression submission with moderate editing" with the approximated processing time of 1-2 months

"**CATEGORY IV**" or "expression submission with major editing" with the approximated processing time of 1-2 months

Email: theclinicalacademia@gmail.com

Telephone: (+66) 095 356 2522

Official LINE: @thaimaf

Contents

International Committee of Medical Journal Editors (ICMJE)

Recommendation for Preparing for Submission

1. General Principles

The text of articles reporting original research is usually divided into Introduction, Methods, Results, and Discussion sections. This so-called "IMRAD" structure is not an arbitrary publication format but a reflection of the process of scientific discovery. Articles often need subheadings within these sections to further organize their content. Other types of articles, such as meta-analyses, may require different formats, while case reports, narrative reviews, and editorials may have less structured or unstructured formats.

Electronic formats have created opportunities for adding details or sections, layering information, cross-linking, or extracting portions of articles in electronic versions. Supplementary electronic-only material should be submitted and sent for peer review simultaneously with the primary manuscript.

2. Reporting Guidelines

Reporting guidelines have been developed for different study designs; examples include CONSORT for randomized trials, STROBE for observational studies, PRISMA for systematic reviews and meta-analyses, and STARD for studies of diagnostic accuracy. Journals are encouraged to ask authors to follow these guidelines because they help authors describe the study in enough detail for it to be evaluated by editors, reviewers, readers, and other researchers evaluating the medical literature. Authors of review manuscripts are encouraged to describe the methods used for locating, select¬ing, extracting, and synthesizing data; this is mandatory for systematic reviews. Good sources for reporting guidelines are the EQUATOR Network and the NLM's Research Reporting Guidelines and Initiatives.

3. Manuscript Sections

The following are general requirements for reporting within sections of all study designs and manuscript formats.

a. Title Page

General information about an article and its authors is presented on a manuscript title page and usually includes the article title, author information, any disclaimers, sources of support, word count, and sometimes the number of tables and figures.

Article title. The title provides a distilled description of the complete article and should include information that, along with the Abstract, will make electronic retrieval of the article sensitive and specific. Reporting guidelines recommend and some journals require that information about the study design be a part of the title (particularly important for randomized trials and systematic reviews and meta-analyses). Some journals require a short title, usually no more than 40 characters (including letters and spaces) on the title page or as a separate entry in an electronic submission system. Electronic submission systems may restrict the number of characters in the title.
Author information: Each author's highest academic degrees should be listed, although some journals do not publish these. The name of the department(s) and institution(s) or organizations where the work should be attributed should be specified. Most electronic submission systems require that authors provide full contact information, including land mail and e-mail addresses, but the title page should list the corresponding authors' telephone and fax numbers and e-mail address. ICMJE encourages the listing of authors' Open Researcher and Contributor Identification (ORCID).

Disclaimers. An example of a disclaimer is an author's statement that the views expressed in the submitted article are his or her own and not an official position of the institution or funder.

Source(s) of support. These include grants, equipment, drugs, and/or other support that facilitated conduct of the work described in the article or the writing of the article itself.

Word count. A word count for the paper's text, excluding its abstract, acknowledgments, tables, figure legends, and references, allows editors and reviewers to assess whether the information contained in the paper warrants the paper's length, and whether the submitted manuscript fits within the journal's formats and word limits. A separate word count for the Abstract is useful for the same reason.

Number of figures and tables. Some submission systems require specification of the number of Figures and Tables before uploading the relevant files. These numbers allow editorial staff and reviewers to confirm that all figures and tables were actually included with the manuscript and, because Tables and Figures occupy space, to assess if the information provided by the figures and tables warrants the paper's length and if the manuscript fits within the journal's space limits.

Conflict of Interest declaration. Conflict of interest information for each author needs to be part of the manuscript; each journal should develop standards with regard to the form the information should take and where it will be posted. The ICMJE has developed a uniform conflict of interest disclosure form for use by ICMJE member journals and the ICMJE encourages other journals to adopt it. Despite availability of the form, editors may require conflict of interest declarations on the manuscript title page to save the work of collecting forms from each author prior to making an editorial decision or to save reviewers and readers the work of reading each author's form.

b. Abstract

Original research, systematic reviews, and meta-analyses require structured abstracts. The abstract should provide the context or background for the study and should state the study's purpose, basic procedures (selection of study participants, settings, measurements, analytical methods), main findings (giving specific effect sizes and their statistical and clinical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations, note important limitations, and not overinterpret findings. Clinical trial abstracts should include items that the CONSORT group has identified as essential. Funding sources should be listed separately after the Abstract to facilitate proper display and indexing for search retrieval by MEDLINE.

Because abstracts are the only substantive portion of the article indexed in many electronic databases, and the only portion many readers read, authors need to ensure that they accurately reflect the content of the article. Unfortunately, information in abstracts often differs from that in the text. Authors and editors should work in the process of revision and review to ensure that information is consistent in both places. The format required for structured abstracts differs from journal to journal, and some journals use more than one format; authors need to prepare their abstracts in the format specified by the journal they have chosen.

The ICMJE recommends that journals publish the clinical trial registration number at the end of the abstract. The ICMJE also recommends that, when a

registration number is available, authors list that number the first time they use a trial acronym to refer to the trial they are reporting or to other trials that they mention in the manuscript. If the data have been deposited in a public repository, authors should state at the end of the abstract the data set name, repository name and number.

c. Introduction

Provide a context or background for the study (that is, the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation. Cite only directly pertinent references, and do not include data or conclusions from the work being reported.

d. Methods

The guiding principle of the Methods section should be clarity about how and why a study was done in a particular way. Methods section should aim to be sufficiently detailed such that others with access to the data would be able to reproduce the results. In general, the section should include only information that was available at the time the plan or protocol for the study was being written; all information obtained during the study belongs in the Results section. If an organization was paid or otherwise contracted to help conduct the research (examples include data collection and management), then this should be detailed in the methods.

The Methods section should include a statement indicating that the research was approved or exempted from the need for review by the responsible review committee (institutional or national). If no formal ethics committee is available, a statement indicating that the research was conducted according to the principles of the Declaration of Helsinki should be included.

i. Selection and Description of Participants

Clearly describe the selection of observational or experimental participants (healthy individuals or patients, including controls), including eligibility and exclusion criteria and a description of the source population. Because the relevance of such variables as age, sex, or ethnicity is not always known at the time of study design, researchers should aim for inclusion of representative populations into all study types and at a minimum provide descriptive data for these and other relevant demographic variables. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., prostate cancer)." Authors should define how they measured race or ethnicity and justify their relevance.

ii. Technical Information

Specify the study's main and secondary objectives–usually identified as primary and secondary outcomes. Identify methods, equipment (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow others to reproduce the results. Give references to established methods, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well-known; describe new or substantially modified methods, give the reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration. Identify appropriate scientific names and gene names.

iii. Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to judge its appropriateness for the study and to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Avoid relying solely on statistical hypothesis testing, such as P values, which fail to convey important information about effect size and precision of estimates. References for the design of the study and statistical methods should be to standard works when possible (with pages stated). Define statistical terms, abbreviations, and most symbols. Specify the statistical software package(s) and versions used. Distinguish prespecified from exploratory analyses, including subgroup analyses.

e. Results

Present your results in logical sequence in the text, tables, and figures, giving the main or most important findings first. Do not repeat all the data in the tables or figures in the text; emphasize or summarize only the most important observations. Provide data on all primary and secondary outcomes identified in the Methods Section. Extra or supplementary materials and technical details can be placed in an appendix where they will be accessible but will not interrupt the flow of the text, or they can be published solely in the electronic version of the journal.

Give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical significance attached to them, if any. Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables. Avoid nontechnical uses of technical terms in statistics, such as "random" (which implies a randomizing device), "normal," "significant," "correlations," and "sample."

Separate reporting of data by demographic variables, such as age and sex, facilitate pooling of data for subgroups across studies and should be routine, unless there are compelling reasons not to stratify reporting, which should be explained.

f. Discussion

It is useful to begin the discussion by briefly summarizing the main findings, and explore possible mechanisms or explanations for these findings. Emphasize the new and important aspects of your study and put your finings in the context of the totality of the relevant evidence. State the limitations of your study, and explore the implications of your findings for future research and for clinical practice or policy. Do not repeat in detail data or other information given in other parts of the manuscript, such as in the Introduction or the Results section.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, distinguish between clinical and statistical significance, and avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been completed. State new hypotheses when warranted, but label them clearly.

g. References

i. General Considerations Related to References

Authors should provide direct references to original research sources whenever possible. References should not be used by authors, editors, or peer reviewers to promote self-interests.Although references to review articles can be an efficient way to guide readers to a body of literature, review articles do not always reflect original work accurately. On the other hand, extensive lists of references to original work on a topic can use excessive space. Fewer references to key original papers often serve as well as more exhaustive lists, particularly since references can now be added to the electronic version of published papers, and since electronic literature searching allows readers to retrieve published literature efficiently.

Do not use conference abstracts as references: they can be cited in the text, in parentheses, but not as page footnotes. References to papers accepted but not yet published should be designated as "in press" or "forthcoming." Information from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source.

Avoid citing a "personal communication" unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, obtain written permission and confirmation of accuracy from the source of a personal communication.

Some but not all journals check the accuracy of all reference citations; thus, citation errors sometimes appear in the published version of articles. To minimize such errors, references should be verified using either an electronic bibliographic source, such as PubMed, or print copies from original sources. Authors are responsible for checking that none of the references cite retracted articles except in the context of referring to the retraction. For articles published in journals indexed in MEDLINE, the ICMJE considers PubMed the authoritative source for information about retractions. Authors can identify retracted articles in MEDLINE by searching PubMed for "Retracted publication [pt]", where the term "pt" in square brackets stands for publication type, or by going directly to the PubMed's list of retracted publications.

References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses.

References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. The titles of journals should be abbreviated according to the style used for MEDLINE (www.ncbi.nlm.nih.gov/nlmcatalog/journals). Journals vary on whether they ask authors to cite electronic references within parentheses in the text or in numbered references following the text. Authors should consult with the journal to which they plan to submit their work.

ii. Reference Style and Format

References should follow the standards summarized in the NLM's International Committee of Medical Journal Editors (ICMJE) Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals: Sample References webpage and detailed in the

NLM's Citing Medicine, 2nd edition. These resources are regularly updated as new media develop, and currently include guidance for print documents; unpublished material; audio and visual media; material on CD-ROM, DVD, or disk; and material on the Internet.

h. Tables

Tables capture information concisely and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text.

Prepare tables according to the specific journal's requirements; to avoid errors it is best if tables can be directly imported into the journal's publication software. Number tables consecutively in the order of their first citation in the text and supply a title for each. Titles in tables should be short but self-explanatory, containing information that allows readers to understand the table's content without having to go back to the text. Be sure that each table is cited in the text.

Give each column a short or an abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes, and use symbols to explain information if needed. Symbols may vary from journal to journal (alphabet letter or such symbols as *, †, ‡, §), so check each journal's instructions for authors for required practice. Identify statistical measures of variations, such as standard deviation and standard error of the mean.

If you use data from another published or unpublished source, obtain permission and acknowledge that source fully.

Additional tables containing backup data too extensive to publish in print may be appropriate for publication in the electronic version of the journal, deposited with an archival service, or made available to readers directly by the authors. An appropriate statement should be added to the text to inform readers that this additional information is available and where it is located. Submit such tables for consideration with the paper so that they will be available to the peer reviewers.

i. Illustrations (Figures)

Digital images of manuscript illustrations should be submitted in a suitable format for print publication. Most submission systems have detailed instructions on the quality of images and check them after manuscript upload. For print submissions, figures should be either professionally drawn and photographed, or submitted as photographic-quality digital prints.

For X-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send high-resolution photographic image files. Since blots are used as primary evidence in many scientific articles, editors may require deposition of the original photographs of blots on the journal's website.

Although some journals redraw figures, many do not. Letters, numbers, and symbols on figures should therefore be clear and consistent throughout, and large enough to remain legible when the figure is reduced for publication. Figures should be made as self-explanatory as possible, since many will be used directly in slide presentations. Titles and detailed explanations belong in the legends—not on the illustrations themselves.

Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background. Explain the internal scale and identify the method of staining in photomicrographs.

Figures should be numbered consecutively according to the order in which they have been cited in the text. If a figure has been published previously, acknowledge the original source and submit written permission from the copyright holder to reproduce it. Permission is required irrespective of authorship or publisher except for documents in the public domain.

In the manuscript, legends for illustrations should be on a separate page, with Arabic numerals corresponding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend.

j. Units of Measurement

Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

Temperatures should be in degrees Celsius. Blood pressures should be in millimeters of mercury, unless other units are specifically required by the journal.

Journals vary in the units they use for reporting hematologic, clinical chemistry, and other measurements. Authors must consult the Information for Authors of the particular journal and should report laboratory information in both local and International System of Units (SI).

Editors may request that authors add alternative or non-SI units, since SI units are not universally used. Drug concentrations may be reported in either SI or mass units, but the alternative should be provided in parentheses where appropriate.

k. Abbreviations and Symbols

Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers. Avoid abbreviations in the title of the manuscript. The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on first mention unless the abbreviation is a standard unit of measurement.

Original Article

Level of root canal filling of the previous treatment and successful endodontic retreatment

ORIGINAL ARTICLE BY

Somphongs Sripratipbundit, D.D.S.
Dental Department, Uthaitani Hospital, Thailand

ABSTRACT

OBJECTIVE

To identify the relationship between level of root canal filling of the previous treatment and successful endodontic retreatment.

METHODS

A retrospective cohort study was conducted by reviewing medical records of patients with condition of endodontic retreatment coming to Uthaitani Hospital between 2011 and 2014. Data regarding level of root canal filling of the previous treatment as well as data from clinical examination and radiographic findings of the teeth were extracted from the records. The primary outcome of the study was successful endodontic retreatment.

RESULTS

Forty nine cases with 49 teeth were reviewed. The success rate was 67.3% for the retreatment. Using level root canal filling 0.5-1.0 mm of the previous treatment as the reference, level of root canal filling at 1.1 to 2.0 mm (adjusted odds ratio (AOR), 0.60; 95% confidence interval (CI), 0.90 to 4.09), more than 2 mm (AOR, 0.26; 95% CI, 0.03 to 2.02) or filling to the apex or overfill (AOR 0.30; 95% CI, 0.01 to 9.56) were found not to be associated with successful endodontic retreatment. Moreover, male sex, aged more than 45 years or older, molar, good quality of root canal filling and radiological findings of rarefaction were also found not to be associated with the successful retreatment.

CONCLUSION

Level of root canal filling of the previous treatment were not associated with successful endodontic retreatment.

INTRODUCTION

Failure of endodontic treatment can lead to pain, swelling and draining sinus tract.[1] It is asserted that persistent or reintroduced microorganisms are the major cause of root canal failure.[2] The other causes include iatrogenic procedural error such as poor access cavity design, untreated canal, poorly cleaned or obturated canal,[3,4] complications of instrumentation e.g., ledges, perforations, or separated instruments,[5] and overextensions of root –filling materials.[6] Coronal leakage has also been blamed for posttreatment disease as have persistent intracanal and extracanal infection and radicular cyst.[7-11] There are many treatment options including endodontic retreatment, endodontic surgery or tooth extraction.[12]

Endodontic retreatment is usually the first option for treatment, if the endodontic retreatment is fail, dentist should consider alternative option treatment. Endodontic retreatment is the difficult treatment and it must inquire into the cause of disease.[12] Many studies reported that the success rate of initial endodontic treatment was range between 86 and 98%.[13,14] The success rate may depend on differences in experimental design and clinic procedures, criteria for evaluation of the periapical healing, and the length of the postoperative observation period.[15] The previous three studies reported that endodontic retreatment had less success rate than that of initial endodontic treatment, ranging from 62 to 85%.[15-17] The study of Bergenholtz G et al. reported that retreatment carried out because of technical inadequacies alone were successful in 94% of the cases.[18] The study of Sjogren U et al., [15] Imura et al.[17] found that factors influencing lower success rate were pretreatment rarefaction, level of root canal filling more than 2 mm and poor quality of root canal filling by measurement adequate root canal filling. However, most of the studies was conducted in the Western countries with no reports from Asian patients. Thus, this study aim was to identify the relationship between level of root canal filling and successful endodontic retreatment.

METHODS

Study design and oversight

This was a retrospective cohort study determining the relationship between level of root canal filling and successful endodontic retreatment. We reviewed medical records of those with endodontic retreatment visiting Uthaithani Hospital between 2011 and 2014 without no exclusion criteria. The procedure of endodontic retreatment is sterile technique that begins by removing old restoration especially leakage crown, then removing caries and crack line for eliminate route of microorganism penetrating to root canal. After that, removing foreign body and root canal filling, cleaning and shaping root canal. Finally, filling root canal adequately and proper length.

Data collection

Data regarding level of root canal filling from radiological findings as well as patients' sex, age, history and oral examination of tooth position, tooth radiographic findings for quality of root canal filling, and rarefaction were reviewed and recorded onto spreadsheet for data analysis. All patients were asked about posttreatment pain and tenderness of tooth.

Table I. Potential factors associated with successful endodontic retreatment

Factor	Successful endodontic retreatment No. (%)	Failed endodontic retreatment No. (%)	Crude odds ratio (95% confidence interval)	Adjusted odds ratio (95% confidence interval)
Male sex	13 (39)	4 (25)	0.51 (0.14-1.94)	1.03 (0.20-5.39)
Age 45 years or older	15 (45)	10 (30)	0.57 (0.17-1.91)	3.42 (0.61-19.04)
Molar	25 (75.8)	15 (93.8)	0.21 (0.24-1.83)	0
Good quality of root canal filling	33 (100)	11 (69)	0	0
Radiological findings of rarefaction of root canal	9 (27)	8 (50)	0.38 (0.11-1.3)	0.35 (0.06-2.00)
Level of previous root canal filling-mm				
0.5-1.0	18 (55)	5 (31)	Reference	Reference
1.1-2.0	10 (30)	5 (31)	0.56 (0.13-2.40)	0.60 (0.90-4.09)
>2.0	4 (12)	4 (25)	0.28 (0.51-1.57)	0.26 (0.03-2.02)
To apex, overfill	1 (3)	2 (13)	0.14 (0.01-1.86)	0.30 (0.01-9.56)

Plus minus values are mean plus minus standard deviation

Data regarding of clinical examination were from the evaluation of two dentists in relation to percussion, mobility of teeth, swelling and draining sinus tract. Radiological findings were measured with a ruler, view box and magnifying glass for examine periapical lesion, level of root canal filling and quality of root canal filling. Dr.IB Bender's19 criteria was used to judge the success rate of endodontic retreatment.

Outcomes

The primary outcome of the study was successful endodontic retreatment which defined by absence of pain or swelling, no sinus tract , no loss of function and radiographic evidence of an eliminated or arrested area of rarefaction after 6 to 24 months.[19] If one of the following occurred, i.e., pain or swelling, sinus tract, loss of function, radiographic evidence of an increased or same size area of rarefaction after 6

Table 2. Possible causes of failed endodontic retreatment

Possible causes	No. (%)
Pain or swelling of gum	5 (31)
Crown root fracture	3 (19)
Vertical root fracture	3 (19)
Inadequate root filling or underfill	3 (19)
No changes in size of radiological findings of rarefaction of root canal	2 (13)

to 24 months, periapical lesion with radiolucency area after treatment, we would consider as failure for treatment

Statistical analysis

Descriptive statistics were used to summarize data interpreting using frequency, percentage, mean, standard deviation, median and interquartile range Crude odds ratio (COR) and adjusted odds ratio (AOR) were used to identify the relationship between level of root canal filling and Successful rate of endodontic retreatment

RESULTS

Record of 49 teeth from 49 patients were reviewed. Most of them were female with aged less averagely younger than 45 years old (Table 1). Most of the teeth were molar. Good quality of filling were found in all cases of successful endodontic retreatment. Moreover, level of previous filling in most of the teeth were between 0.5-1.0 mm. Comparing between the those with successful endodontic retreatment and those with fail retreatment, the former tended to have higher proportion of male gender, anterior or premolar teeth, good quality of filling and less proportion of those with rarefaction of root canal form radiological findings.

The success rate was 67.3% for the retreatment. Using level root canal filling 0.5-1.0 mm of the previous treatment as the reference, level of root canal filling at 1.1 to 2.0 mm (adjusted odds ratio (AOR), 0.60; 95% confidence interval (CI), 0.90 to 4.09), more than 2 mm (AOR, 0.26; 95% CI, 0.03 to 2.02) or filling to the apex or overfill (AOR 0.30; 95% CI, 0.01 to 9.56) were found not to be associated with successful endodontic retreatment. Moreover, the following factors were also found not to be associated with the successful retreatment; male sex (AOR, 1.03; 95% CI 0.20 to 5.39), aged more than 45 years or older (AOR, 3.42; 95% CI 0.61 to 19.04), molar, good quality of root canal filling and radiological findings of rarefaction (AOR, 0.35; 95% CI 0.06 to 2.00) were also found not to be associated with the successful retreatment. Table 2 shows the possible causes of failed endodontic

retreatment. Pain or swelling of gum were the major cause (31%) followed by fractures, inadequate root filling and no changes in size of radiological findings of rarefaction of root canal

DISCUSSION

Principal findings

From 49 cases, the success rate was more than a half of the retreatment. Using level root canal filling 0.5-1.0 mm as the reference,[20,21] level of root canal filling at 1.1-2.0 mm, more than 2 mm or filling to the apex or overfill were found not to be associated with successful endodontic retreatment. Moreover, male sex, aged more than 45 years or older, type of teeth, good quality of root canal filling and radiological findings of rarefaction were also found not to be associated with the successful retreatment.

Strengths and limitations

To our knowledge, this is the first study identify the relationship between level of root canal filling and successful endodontic retreatment in Asian population. However, regarding the retrospective in nature, the conclusion might be affected by the validity of available data. Moreover, the sample of the present study was relatively small, thus, the conclusion might not be well estimated. The treatment and evaluation were also done by a separate team of dentists, variation might be inevitable. long-term follow up window was suggested.

Comparison with other studies

In the presents study, the success rate was 67.3% for the endodontic retreatment. Our findings were consistent with the three previous studies by Sjogren U, et al,[15] de Chevigny C, et al,[22] and Imura N, et al.[17] which revealed that success rate were approximately 61.7%, 83% and 85.9%, respectively. Little differences might be due to the the variety of their study designs. Moreover, the length of study period was also important as it influenced success of endodontic retreatment in term of allowing more wound healing overtime.[23] It also suggested that nonsurgical retreatment may have higher success rate with follow-up period between 4 to 6 years.[23] However, the present study was done over four years with averagely 2 years of follow-up period. In the current study, we found that the level root canal filling was not associated with the successful endodontic retreatment. Our findings were similar to that of Sjogren U et al which indicating that the apical level of root canal filling had no significant influence on the outcome of retreatment.[15] In the present study, none of evaluated factors demonstrated the association with successful endodontic retreatment. Nonetheless, to our knowledge, no previous literatures suggested any factors influenced the higher success rate of endodontic retreatment.

Conclusion and implications

Level of root canal filling were found not to be associated with successful endodontic retreatment. However, regarding the small sample of the present study, the author suggested for larger prospective cohort study for better evaluation of the relationship between the level of root canal filling and successful endodontic retreatment. However, if it is possible, a large randomized controlled trial might be a better option for a most precise estimation of the relationship.

ACKNOWLEDGMENTS

The author would like to thank the Director of the Uthaitani Hospital for support this study and Ms. Ruttana Ountapun for statistical analysis support.

REFERENCES

1. Lin LM, Pascon EA, Skribner J, Gangler P, Langeland K. Clinical, radiographic, and histologic study of endodontic treatment failures. Oral Surg Oral Med Oral Patho 1991; 71: 603-11.

2. Nair PN, Sjogren U, Krey G, Kahnberg KE, Sundqvist G: Intraradicular bacteria and fungi in root-filled, asymptomatic human teeth with therapy-resistant periapical lesions: a long-term light and electron microscopic follow-up study, J Endodon 1990; 16: 580-8.

3. Chugal NM, Clive JM, Spangberg LS: Endodontic infection: some biologic and treatment factors associated with outcome, Oral Surg Oral Med Oral Pathol Oral Radiol Endodon 2003; 96: 81-90.

4. Ingle JI, Simon JH, Machtou P, Bogaerts P: Outcome of endodontic treatment and retreatment. In Ingle JI, Bakland LK, editors: Endodontics, ed 5, Hamilton, Ontario, 2002, BC Decker, p 747-53.

5. Sundqvist G, Figdor D: Endodontic treatment of apical periodontitis. In Orstavik D, Pitt-Ford TR, editors: Essential Endodontology: Prevention and Treatment of Apical periodontitis, London, 1998, Blackwell Science Ltd, p 242.

6. Nair PN, Sjogren U, Krey G, Sundqvist G: Therapy-resistant foreign body giant cell granuloma at the periapex of a root-filled human tooth, J Endodon 1990; 16: 589-95.

7. Lazarski MP, Walker WA, III, Flores CM, Schindler WG, Hargreaves KM: Epidemiological evaluation of the outcomes of nonsurgical root canal treatment in a large cohort of insured dental patients, J Endodon 2001; 27: 791-6.

8. Madison S, Swanson K, Chiles SA: An evaluation of coronal microleakage in endodontically treated teeth. II. Sealer types, J Endodon 1987; 13: 109-12.

9. Saunders WP, Saunders EM: Coronal leakage as a cause of failure in root –canal therapy: a review, Endodon Dent Traumatol 1994; 10: 105-8.

10. Swanson K, Madison S: An evaluation of coronal microleakage in endodontically treated teeth. I. Time periods J Endodon 1987; 13: 56-9.

11. Nair PN. New perspectives on radicular cysts: do they heal? Int Endodon J 1998; 31: 155-60.

12. Roda RS,Gettleman BH. Non-surgical retreatment. In: Hargreaves KM, Cohen S, editors. Pathway of the pulp 9th ed. St. Louis: Mosby, Inc; 2006. P. 944-1010.

13. Friedman S, Abitbol S, Lawrence HP: Treatment outcome in endodontics: the Toronto Study. Phase 1: initial treatment, J Endodon 2003; 29: 787-93.

14. Friedman S, Mor C:The success of endodontic therapy healing and functionality, Calif Dent Assoc J 2004; 32: 493-503.

15.Sjogren U, Hagglund B, Sundqvist G, Wing K. Factors affecting the long-term results of endodontic treatment. J Endod 1990; 16:498-504

16.Kvist T, Reit C. Results of endodontic retreatment a randomized clinical study comparing surgical and nonsurgical procedures. J Endod 1999; 25: 814-7

17.Imura N, Pinheiro ET, Gomes BP, Zaia AA, Ferraz CC, Souza-Filho FJ. The outcome of endodontic treatment: a retrospective study of 2000 case performed by a specialist. J Endod 2007; 33: 1278-82

18. Bergenholtz G, Lekholm U, Milthon R, Odesjo B, Engstrom B. Retreatment of endodontic fillings. Scand J Dent Res 1979; 87: 217-24

19.Bender IB , Seltzer S , and Soltanoff W . Endodontic success a reappraisal of criteria I and II. Oral Surg 1966 ; 22 : 780-7

20. Katz A, Tamse A, Kaufman AY. Tooth length determination: a review. Oral Surg Oral Med Oral Patho 1991; 72: 238-42.

21.Morfis A, Sylaras S, Georgopoulou M, Kernani M, Prountzos F. Study of the apices of human permanent teeth with the use of a scanning electron microscope. Oral Surg Oral Med Oral Patho 1994; 77: 172-6

22.Chevigny C, Dao TT, Basrani BR, Marquis V, Farzaneh M, Abitbol S, et al. Treatment outcome in endodontics: the Toronto study-phase 3 and 4: orthograde retreatment. J Endod 2008; 34:131-7

23. Torabinejad M, Corr R, Handysides R, Shabahang S. Outcomes of nonsurgical retreatment and endodontic surgery: a systematic review. Endod 2009; 35: 930-7

Levels of confidence and difficulty from medical students' perspective to practice forensic medicine: pre- and post-class evaluation

ORIGINAL ARTICLE BY

Boonsak Hanterdsith, M.D., LL.B., Thai Barrister-at-Law
Maharat Nakhon Ratchasima Hospital, Nakhon Ratchasima, Thailand

ABSTRACT

OBJECTIVE

To evaluate the the levels of confidence and difficulty before and after the course of forensic medicine from the students' perspective.

METHODS

This was a cross-sectional, before and after (pre- and post-class) study to evaluate the levels of confidence and difficulty to practice forensic medicine from students' perspective using structured, self-administered questionnaires in sixth year medical students at Maharat Nakhon Ratchasima Hospital, Thailand.

RESULTS

There were 47 medical students with 100% response rate. Their interest in forensic medicine was moderate. Levels of confidence to perform external postmortem examination post-class was significant higher than that of pre-class ($P<0.01$). Levels of difficulty were, however, not reportedly lower in post-class than that of pre-class. The level of confidence for estimation time of death post-class was higher significantly than that of pre-class, nonetheless, their post-class confidence levels after lecture-only and after lecture with practice with dead body was relatively similar.

CONCLUSION

Levels of confidence was higher in post-class score than that of pre-class after 31 hours course in forensic medicine while levels of difficulty was not reportedly lower in post-class score.

INTRODUCTION

Forensic medicine is a multidisciplinary approach involving with medical and and non-medical personnel. Teaching forensic medicine can cover various subjects such as postmortem examination and autopsy, laws and ethics, toxicology, clinical forensic medicine and forensic psychiatry. Postmortem examination is one of roles for doctor enforced by procedural criminal law.[1] Postmortem examination is one of the duty for Thai doctors especially those in rural hospitals[1] as it is required to achieve the purpose of Thai law.[2]

Forensic medicine courses are varied from country to country but usually taught at undergraduate level.[3-8] The most common methods for teaching is still lecture.[9] Six hours is the minimum learning period that students feel ready for post-mortem external examination with at last four different bodies to allow the students expose to enough variety of cases.[3] In Maharat Nakhon Ratchasima Hospital, forensic medicine is taught in the period of 31 hours in five days; 28 hours for lecture and 3 hours for postmortem examination together with autopsy, but not all of them have a chance to attend the examination.[10] The aim of this study is to evaluate the the levels of confidence and difficulty before and after the course of forensic medicine from the students' perspective.

METHODS

Study design

This was a cross-sectional, pre- and post-class study to assess levels of confidence and difficulty from students' perspective in practicing forensic medicine.

Participants and study site

The participants were all sixth-year medical students rotated to study 5-day course of forensic medicine at Maharat Nakhon Ratchasima Hospital, affiliated with Mahidol University, Thailand.

Data collection

We used structured questionnaires containing questions regarding levels of confidence and difficulty in practicing forensic medicine administered by the students themselves. The questionnaire was applied before the first lecture and again after the last lecture. The basic variables as well as their interests in forensic medicine were also collected in the first part of the questionnaire. Levels of their confidence to undertake postmortem examination especially estimation time of death and difficulty to investigate with each type of cases in the students' perspective were collected in the later part using numeral rating scale was used for grading levels of confidence and difficulty.

Statistical analysis

Number and percentage were used to summarize basic information. Wilcoxon sum rank test was used to analyze the difference levels of confidence and levels of difficulty between pre-class and post-class. Statistical significance was considered when $P<0.05$. All analysis was performed using STATA SE version 12.0.

RESULTS

Overall, 47 students replied the given questionnaire with the response rate of 100%, 31 were male and their median age was 23 years old. Forty one students had to be general practitioners in the rural hospital, four would be further their studying to be specialists.

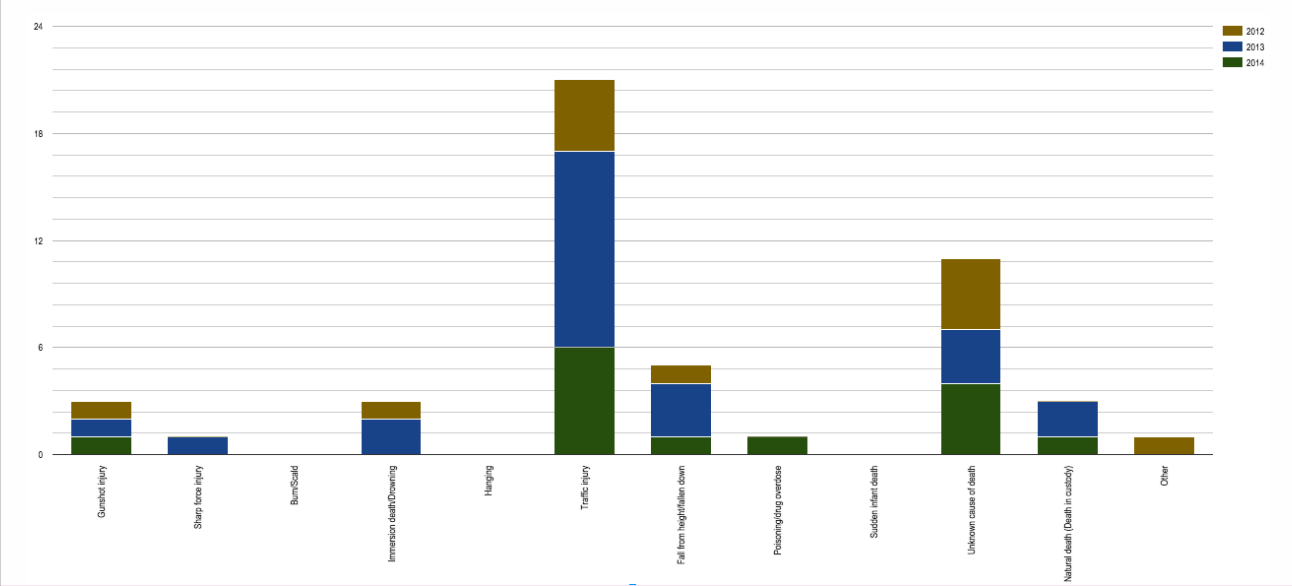


Figure 1. Types of body found in the study period of 2012 to 2014.

Figure 1 shows types of body found which aslo the topics for teaching. We found that the major cause of unnatural death in the study period was traffic injury-related death followed by unknown cause of death. There was no case of death from burn, hanging and sudden infant death during the study period.

Interest in forensic medicine was moderate. Level of interest pre-class and post-class was relatively similar (Table 1). It also found that the levels of confidence in post-class to do external examination on a dead body classified by types of death was significantly higher than that of pre-class ($P<0.01$). Traffic injury-related death was the most common cases found during the study period. However, levels of confidence for the students to deal with death bodies from traffic injury and the others were relatively similar. However, levels of difficulty to deal with the topic-based type of body post-class were not significant difference from that of pre-class.

Table 2 shows that the level of confidence for time of death estimation from students perspective.It found that level of confidence in post-class was higher than that of pre-class significantly ($P<0.01$). Nonetheless, there was no significant difference between the post-class level score between that of lecture-only and lecture with practice with dead body.

DISCUSSION

In the present study, levels of confidence was higher in post-class score than that of pre-class after the short course in forensic medicine while levels of difficulty was not reportedly lower in post-class score. The level of confidence for time of death estimation post-class was significantly higher than that of pre-class, however, their post-class confidence levels after lecture-only and after lecture with practice with dead body study was relatively similar.

Table 1. Pre-and post-class level score

Domain	Pre-class	Post-class	P Value
	Median (interquartile range) level score		
Interest in forensic medicine	6 (5-8)	7 (6.0-7.5)	0.068
Levels of confidence to perform external examination of death body to certify			
Suicide	3 (1.5-5.0)	7 (6-8)	<0.01
Homicide	3 (1-4)	7 (6-8)	<0.01
Accident	4 (2-5)	7 (7-8)	<0.01
Animal attack	4 (2-5)	7 (6-8)	<0.01
Unknown cause of death	3 (1-4)	7 (6-8)	<0.01
Levels of difficulty regarding type of body found			
Gunshot injury	5 (3.5-7.0)	6 (5-7)	0.058
Suspected suicide	5 (3-7)	6 (5-7)	0.232
Suspected homicide	5 (3.5-8.0)	6 (5-7)	0.529
Undetermined manner	5 (3.5-8.0)	6 (5-7)	0.587
Sharp force injury	5 (3.5-6.0)	6 (3.0-7.5)	0.164
Burn/scalds	5 (2.5-6.0)	6 (3.5-8.0)	0.047
Immersion death/drowning	5 (3.5-6.0)	6 (4.5-7.5)	0.097
Hanging	5 (3-6)	6 (3.5-7.5)	0.067
Traffic injury	5 (2.5-6.0)	6 (3.0-7.5)	0.187
Fall from height/fallen down	5 (3-6)	6 (4-7)	0.096
Poisoning/drug overdose	5 (3-7)	6 (5-7)	0.095
Sudden infant death	5 (3.5-8.0)	6 (5-7)	0.421
Unknown cause of death	6 (3.5-8.0)	7 (5-7)	0.193

Table 2. Level of confidence in time of death estimation

Topic	Post-class level score		P Value
	Lecture only	Lecture with practice	
Time to death			<0.01
Pre-class	5 (4-6)	5 (3.5-6.0)	
Post-class	7 (6-8)	7 (5.5-8.0)	

Our findings showed that overall interest in forensic medicine of the students was moderate and this was similar to the previous study.[3] However, their interest did not increase after the course. This might be due to unpleasant feeling during the course especially during autopsy which has often been stated.[7,11,12] However, the subject was still of students' interest due to its usefulness especially for those who have to work in rural hospitals after their graduations.

In the present study, levels of confidence increased after the course comparing to that of before the course when they were still naive to forensic medicine. The findings was similar to that of previous study.[3] In the Article 148 of the Thai Procedural Criminal Code of Laws has stated that if there is a clear, or any other reason to suspect that any person die of unnatural causes, or die while in custody, there must be a postmortem examination unless death by legal execution.[1] Death by unnatural causes was found in approximately 3% of cases.[13] Postmortem examination has to be initiated by police department while role of the doctor in this article is to identify causes of death, and this is one the most difficult practice for all doctors with the external examination only as 28% of cases would be wrong without autopsy examination by experienced forensic pathologists.[13]

In contrary, levels of difficulty to practice forensic medicine regarding topic of lecture for postmortem examination had not changed much after the course. This might be due to the fact that external examination is not enough in some cases, an autopsy is still required for better identifying causes of death as mentioned earlier.

To our knowledge, this is the first study demonstrates that lecture alone can improve level of confidence for estimation time of death as it is one of the most important issues during the scene investigation. The students can do it using postmortem changes. However, in the present study, there was no difference between lecture only and lecture and practice the death body. This might be due to limited opportunities for student to practice with corpses in limited time of the 5-day course. Postmortem autopsy can benefit the student beyond forensic medicine, it also students' affection, their cognition as well as clinical practice.[4,6,11,12]

In conclusion, levels of confidence to practice forensic medicine increased after the course while levels of difficulty to practice forensic medicine were similar between that before and after the course. Due to limitation of cases exposure for the students, we suggested that course re-arranging into small groups throughout the year would allow the students to expose more varieties of cases. Web-based course is an option which also has been described elsewhere for for its ability to increase learners' confidence.[14]

COMPETING INTERESTS

Abstract of this paper has been presented as poster in AMEE Conference 2015. The author received no fundings and had no competing interests

REFERENCES

1. Thai Procedural Criminal Code of Laws.
2. Thai Medical Council announcement item 12/255: Medical Competency Assessment Criteria for National License 2012 [cited 2015 8 June]. Available from: http://www.tmc.or.th/file_08062012.pdf.
3.Anders S, Fischer-Bruegge D, Fabian M, Raupach T, Petersen-Ewert C, Harendza S. Teaching post-mortem external examination in undergraduate medical education--the formal and the informal curriculum. Forensic science international. 2011;210(1-3):87-90.
4.Anders S, Mueller M, Sperhake JP, Petersen-Ewert C, Schiekirka S, Raupach T. Autopsy in undergraduate medical education--what do students really learn? International journal of legal medicine. 2014;128(6):1031-1038.
5.Madadin MS. Assessment of knowledge about, attitudes toward, and awareness of a forensic medicine course among medical students at the University of Dammam. Journal of forensic and legal medicine. 2013;20(8):1108-1111.
6.McNamee LS, O'Brien FY, Botha JH. Student perceptions of medico-legal autopsy demonstrations in a student-centred curriculum. Medical education. 2009;43(1):66-73.
7.Papadodima SA, Sergentanis TN, Iliakis RG, Sotiropoulos KC, Spiliopoulou CA. Students who wish to specialize in forensic medicine vs. their fellow students: motivations, attitudes and reactions during autopsy practice. Advances in health sciences education : theory and practice. 2008;13(4):535-546.
8.Verma SK. Knowledge and attitude of medical students in Delhi on postmortem examination. Indian journal of medical sciences. 1999;53(8): 352-358.
9.Grumet BR. Legal medicine in medical schools: a survey of the state of the art. Journal of medical education. 1979;54(10):755-758.
10 Course Syllabus for Teaching Forensic Medicine, Maharat Nakhon Ratchasima Hospital, 2016.
11.Bamber AR, Quince TA, Barclay SI, Clark JD, Siklos PW, Wood DF. Medical student attitudes to the autopsy and its utility in medical education: a brief qualitative study at one UK medical school. Anatomical sciences education. 2014;7(2):87-96.
12.Ioan B, Neagu M, Manoilescu I, Plaiesu T, Damian S. Utility of autopsy in medical education--students' opinions and attitudes. Revista medico-chirurgicala a Societatii de Medici si Naturalisti din Iasi. 2014;118(3):801-807.
13.Nashelsky MB, Lawrence CH. Accuracy of cause of death determination without forensic autopsy examination. The American journal of forensic medicine and pathology. 2003;24(4):313-319.
14.Schmeling A, Kellinghaus M, Becker JC, Schulz R, Schafer A, Pfeiffer H. A web-based e-learning programme for training external post-mortem examination in curricular medical education. International journal of legal medicine. 2011;125(6):857-861.

Mortality in elderly with end-stage renal disease treated with peritoneal dialysis and conservative treatment

ORIGINAL ARTICLE BY

Duangrat Tanratananon, M.D.
Surin Hospital, Surin, Thailand

ABSTRACT

OBJECTIVE

To compare the hazard rates regarding all-cause mortality in those with conservative treatment and peritoneal dialysis (PD) in elderly patients in with end-stage renal disease (ESRD).

METHODS

A retrospective cohort study was conducted at Surin Hospital, Thailand. The present study included patients with ESRD aged 60 years old or older who visited the hospital between 2008 and 2014. Baseline demographic and clinical data were collected reviewed and collected in both those with peritoneal dialysis (PD) and conservative treatment. The primary outcome was all-cause mortality. Secondary outcomes were disease specific mortality.

RESULTS

One hundred and sixty nine patients were included in the analysis; 62 in PD group and 107 in conservative treatment group. The former had longer survival both in term of mean survival time (32.4 vs. 19.9 months) and median survival time (26.3 vs. 15.3 months) (P=0.004). All-cause mortality rate was not lower in the PD group (HR, 0.21; 95% CI, 0.03 to 1.82). From the subgroup analysis, those with aged more than 65 years old would benefit from the PD (HR, 0.016; 95% CI, 0.001 to 0.426). Moreover, those with GFR less than 7-ml/mim/1.73m^2 were another group of patients that would benefit from the PD. (HR, 0.001; 95% CI, 0.001 to 0.394).

CONCLUSION

Elderly patients with ESRD treated with PD did not have better outcomes regarding all-cause mortality comparing to those treated conservatively.

INTRODUCTION

There were 114,813 cases of end stage renal disease (ESRD) reported by the United State Renal Data (USRDS) in 2012, especially an increase in number of elderly ESRD patients.[1] The total number of elderly patients required renal replacement therapy increases due to longer life expectancy.[2] However, there is no definite optimal modality of renal replacement therapy for elderly patients.[3] The early French study performed suggested that peritonial dialysis (PD) is suitable for elderly patients.[4] There are several studies supporting that survival rate is higher in those with PD.[5-8] However, some studies reported the opposite findings[9.10] leading to the controversy on the suitable treatment for ESRD. Therefore, the aim of this study is to investigate the optimal treatment options between PD and conservative treatment in Thai elderly ESRD patients.

METHODS

Study design

A retrospective cohort study was conducted to evaluate the all-cause mortality of elderly patients with ESRD undergoing either PD or conservative treatment at Surin Hospital, Thailand between June 2008 and June 2014.

Patients

We reviewed medical records of those with following criteria; (i) patients with ESRD which was defined as eGFR≤15 ml/min/1.73m^2 by Cockoft-Gault equation[11] and who participated in the education program for peritoneal dialysis preparation and (ii) aged 60 years old or older. They were excluded if they were receiving hemodialysis, undergoing kidney transplantation or receiving either PD or conservative treatment with a treatment time of less than 3 months when this study was commenced in June 2008. All data was retrieved from the medical record from database of Surin Hospital. In case of lost to follow-up, the vital state (defined as alive or dead) of each patient was requested from Surin Registration Office.

Outcomes

The primary outcome was defined as all-cause mortality. The secondary outcomes were death from sepsis, death from cerebrovascular diseases, death from volume overload and death from ischemic heart disease e.g., myocardial infarction and stroke. systemic infection and determine the risk factor of death. These outcomes were analyzed to determine the most appropriate treatment in elderly ESRD patients.

Statistical analysis

All data were recorded using double entry approach and analyzed by statistical software package. Frequency tables for all variables were generated to identify the wild values prior to the analysis. Data were described as (i) number and percentage for categorical variables, (ii) mean and standard deviation (SD) for normally distributed scale variables, and (iii) median and interquartile range (IQR) for non-normally distributed scale variables. Chi-square, Fisher's exact test, independent t-test and Mann-Whitney U test were used where appropriate. Outcomes were interpreted using adjusted hazard ratio (HR) and its 95% confidence interval (CI). Survival analysis was computed using the Kaplan-Meier estimation and the Cox-proportional hazard regression to identify hazard factors affecting the outcomes.

Table I. Characteristics of the patients

Characteristics	Peritoneal dialysis (N=62)	Conservative treatment (N=107)	P Value
Male-no. (%)	28 (45.2)	41 (38.3)	0.419
Age-yr			<0.001
Median	65	72	
Interquartile range	61-71	68-77	
Underlying disease-no. (%)			
Hypertension	47 (75.8)	37 (34.6)	<0.001
Diabetes	32 (51.6)	46 (43.0)	0.337
Renal stone	1 (1.6)	0	0.367
Gout	6 (9.7)	1 (0.9)	0.010
Dyslipidemia	2 (3.2)	0	0.133
Serum blood urea nitrogen-mg%			<0.001
Median	36	57	
Interquartile range	29.4-56.0	44.8-75.8	
Serum creatinine-mg%			0.945
Median	7.0	7.3	
Interquartile range	5.3-9.6	4.9-10.2	
Glomerular filtration rate-ml/min/1.73m^2			0.020
<7	27 (43.5)	51 (47.7)	
7-9	24 (38.7)	22 (20.6)	
Higher	16 (25.8)	34 (31.8)	
Mean	7.6±2.7	7.7±3.6	
Hemoglobin-mg%	9.0±1.6	10.1±1.6	0.001
Hematocrit-%	27.2±5.0	30.4±4.9	0.001
Serum albumin-g/ml	2.9±0.6	3.7±0.2	0.005
Serum potassium-meq/L	3.2±0.8	4.4±0.8	<0.001

Table I. (Continued)			
Serum calcium-meq/L	9.0±1.4	9.0±1.1	0.987
Serum phosphate-mg%			<0.001
Median	4.3	3.6	
Interquartile range	2.3-3.8	3.6-5.2	

Plus minus values are mean plus minus standard deviation

RESULTS

Between June 2008 and June 2014, a total of 169 elderly ESRD patients were reviewed and included in the analysis; 107 in conservative group and 62 in PD group. Most of them were female and all of them were 60 years or older (Table 1). For the PD group, they tended to be younger (P<0.001), have higher proportion with those with hypertension (P<0.001) and gout (P=0.010), have less serum blood urea nitrogen (P<0.001), less hemoglobin level (P<0.001), hematocrit (P<0.001), serum albumin (P<0.005), serum potassium (P<0.001) and serum phosphate (P<0.001). However, other characteristics were relatively similar between the two groups.

In relation to survival between those with PD and those with conservative treatment, the former had longer survival both in term of mean survival (32.4 vs. 19.9 months) and median survival (26.3 vs. 15.3 months) (P=0.004; log rank (Mantel-Cox) test. Infection, especially peritonitis, was the leading cause of death in our study.

Table 2 shows treatment outcomes of the patients. From the Cox proportional hazard regression, all-cause mortality rate was not lower in the PD group (HR, 0.21; 95% CI, 0.03 to 1.82). The same patterns were observed when considering death from sepsis, cerebrovascular disease, volume overload and death from ischemic heart disease. Factors included in the regression for all of the outcomes are presented in Table 3.

Table 3 shows factor potentially predicting all-cause mortality. From the Cox proportional hazard regression, it seemed that male sex, age, on peritoneal dialysis, having hypertension and diabetes as underlying diseases, level of hemoglobin, GFR, serum albumin, serum potassium, serum calcium were not affecting all-cause mortality.

For the subgroup analysis using Cox proportional hazard regression, it seemed that those with aged 65 years or older would benefit from the PD (HR, 0.016; 95% CI, 0.001 to 0.426). Moreover, those with GFR less than 7-ml/mim/1.73m^2 were another group of patients that would benefit from the PD. (HR, 0.001; 95% CI, 0.001 to 0.394). However, those with hemoglobin<10 mg %, serum potassium≤5.0 meq/L or serum phosphate≤5.0 mg% would not benefit from the PD.

DISCUSSION

In this study, elderly ESRD patients treated with PD did not have better outcomes regarding all-cause mortality, death from sepsis, death from cerebrovascular disease, death from volume

Table 2. Treatment outcomes

Characteristics	Peritoneal dialysis (N=62)	Conservative treatment (N=107)	P Value
	no. (%)		
All-cause mortality	23 (37.1)	57 (53.3)	0.16
Death from sepsis	11 (17.7)	4 (3.7)	0.99
Death from cerebrovascular disease	2 (3.2)	0	-
Death from volume overload	4 (6.5)	0	-
Death from ischemic heart disease	0	1 (0.9)	-

overload and death from ischemic heart disease. Moreover, none of the factors included in the analysis seemed to affect all-cause mortality. Those aged 65 years or older and GFR less than 7 ml/min/ 1.73m^2 were the two groups that would benefit from the PD.

Our findings were similar to that of previous studies comparing the survival rates in patients with ESRD aged 65 years or older showed that the group with PD had higher survival rate than that in conservative group.[7,8] These findings were supported by other studies showing that PD provided better benefit for

Table 3. Factors potentially predicting all-cause mortality

Characteristics	Adjusted hazard ratio (95% confidence interval)
Male sex	0.62 (0.27-1.56)
Age-yr	1.00 (0.93-1.07)
Peritoneal dialysis	0.21 (0.03-1.82)
Hypertension	0.69 (0.24-1.96)
Diabetes mellitus	1.00 (0.28-3.49)
Hemoglobin-mg%	1.09 (0.84-1.39)
Glomerular filtration rate	1.01 (0.81-1.39)
Serum albumin- g/ml	0.47 (0.18-1.24)
Serum potassium-meq/L	0.74 (0.44-1.26)
Serum calcium-meq/L	1.02 (0.69-1.50)

Table 4. Subgroup analysis whether the peritoneal dialysis affecting all-cause mortality

Characteristics	Adjusted hazard ratio of using peritoneal dialysis (95% confidence interval)	P Value
Age-yr		
≥60	0.213 (0.025-1.819)	0.158
≥65	0.016 (0.001-0.426)	0.013
Glomerular filtration rate-ml/min/1.73m^2		
<7	0.001 (0.001-0.394)	0.024
≥7	1.204 (0.069-20.986)	0.899
Hemoglobin<10 mg%	0.048 (0.000-9.469)	0.260
Serum potassium≤5.0 meq/L	0.225 (0.024-2.114)	0.192
Serum phosphate≤5.0 mg%	0.302 (0.025-3.702)	0.349

geriatric patients.[6,12,13] In term the leading cause of death in the patients with ESRD, infection was mainly responsible for death in this study and mostly associated with infected PD, similar to the study reported by Fontan and co-workers.[5] In addition, older age was found to increase the risk of infected peritonitis.[15] However, some studies found that cardiovascular disease was the common cause of death not infection,[6,14] The difference in major cause of death may be due to smaller number of co-morbidity and lower evidence of cardiovascular risk such as diabetes, hypertension and dyslipidemia in the present study. Subgroup analysis of patient groups of different age ranges indicated that PD is beneficial only in low GFR group (<7 ml/min/1.73m^2), on the other hand, other factors including age, gender, diabetes, co-morbidity and serum albumin did not contribute to the difference in survival rate, consistent with the observation in other studies.[7,9,14,16,17]

This was the first study mentioned the effects of PD in the group of elderly in Thai population with ESRD. As the patients were elderly, outcomes in term of death were then easily observed in the limited time of follow up. With various factors were adjusted in the analysis, our findings also went in the same direction with previous studies. However, our sample still small. precise estimation might no be drawn. Like the others retrospective cohort studies, missing data were not inevitable. However, we verified and collected all relevant data as many as possible while the missing rate was kept very low. As our inclusion were those aged 60 years or older, our findings might, then, be different from that in other observation groups.

In conclusion, the present study demonstrated that elderly ESRD patients treated with PD did not have better outcomes regarding all-cause mortality, death from disease specific causes.

Moreover, PD and other factors did not affect all-cause mortality. Those aged more than 65 years old and GFR less than 7 ml/min/1.73m^2 were the two groups that would benefit from the PD. We suggested for multi-center cohort study for larger study population for better estimation of the effects of PD as well as other factors on all-cause and disease specific mortality.

REFERENCES

1.Introduction to Volume Two: Atlas of End-Stage Renal Disease in the United States [Internet]. 2014 Jan [cited 2015 Jan 22] p. e151–68. Available from: http://www.ajkd.org/article/S027263861301408X/abstract

2.Collins AJ, Kasiske B, Herzog C, Chavers B, Foley R, Gilbertson D, et al: Excerpts from the United States Renal Data System 2006 Annual Data Report: atlas of end-stage renal disease in the United States. Am J Kidney Dis 2007;49(suppl 1):S80–S81.

3.Dimkovic N, Oreopoulos DG. Chronic Peritoneal Dialysis in the Elderly : A review.Perit Dial Int 2000;20:3:276:83.

4.Castrale C, Evans D, Verger C, Fabre E, Aguilera D, Ryckelynck J-P, et al. Peritoneal dialysis in elderly patients: report from the French Peritoneal Dialysis Registry (RDPLF). Nephrol Dial Transplant Off Publ Eur Dial Transpl Assoc - Eur Ren Assoc. 2010 Jan; 25(1):255–62.

5.Pérez Fontan M, Rodríguez-Carmona A, García-Naveiro R, Rosales M, Villaverde P, Valdés F. Peritonitis-related mortality in patients undergoing chronic peritoneal dialysis. Perit Dial Int J Int Soc Perit Dial. 2005 Jun;25(3):274–84.

6.Hiramatsu M, Japanese Society for Elderly Patients on Peritoneal Dialysis. How to improve survival in geriatric peritoneal dialysis patients. Perit Dial Int J Int Soc Perit Dial. 2007 Jun;27 Suppl 2:S185–9.

7. Shum CK, Tam KF, Chak WL, Chan TC, Mak YF, Chau KF. Outcomes in older adults with stage 5 chronic kidney disease: comparison of peritoneal dialysis and conservative management. J Gerontol A Biol Sci Med Sci. 2014 Mar;69(3):308–14.

8.Dasgupta I, Rayner HC. Dialysis versus conservative management of elderly patients with advanced chronic kidney disease. Nat Clin Pract Nephrol. 2007;3(9):480–1.

9.Chandna SM, Da Silva-Gane M, Marshall C, Warwicker P, Greenwood RN, Farrington K. Survival of elderly patients with stage 5 CKD: comparison of conservative management and renal replacement therapy. Nephrol Dial Transplant Off Publ Eur Dial Transpl Assoc - Eur Ren Assoc. 2011 May;26(5):1608–14.

10.Kurella Tamura M, Covinsky KE, Chertow GM, Yaffe K, Landefeld CS, McCulloch CE. Functional status of elderly adults before and after initiation of dialysis. N Engl J Med. 2009 Oct 15;361(16):1539–47.

11. Cirillo M. [Rationale, pros and cons of GFR estimation: the Cockcroft-Gault and MDRD equations]. G Ital Nefrol. 2009 Jun;26(3): 310–7.

12.Peritoneal dialysis in elderly patients: report from the French Per... - PubMed - NCBI [Internet]. [cited 2015 Feb 18]. Available from: http://www.ncbi.nlm.nih.gov/pubmed/19666656

13.Carson RC, Juszczak M, Davenport A, Burns A. Is maximum conservative management an equivalent treatment option to dialysis for elderly patients with significant comorbid disease? Clin J Am Soc Nephrol CJASN. 2009 Oct;4(10):1611–9.

14.Utaş C, Turkish Multicenter Peritoneal Dialysis Study Group. Patient and technique survival on CAPD in Turkey. Perit Dial Int J Int Soc Perit Dial. 2001 Dec;21(6):602–6.

15.Nessim SJ, Bargman JM, Austin PC, Story K, Jassal SV. Impact of age on peritonitis risk in peritoneal dialysis patients: an era effect. Clin J Am Soc Nephrol CJASN. 2009 Jan;4(1): 135–41.

16.Shiao C-C, Kao T-W, Hung K-Y, Chen Y-C, Wu M-S, Chu T-S, et al. Seven-year follow-up of peritoneal dialysis patients in Taiwan. Perit Dial Int J Int Soc Perit Dial. 2009 Aug;29(4): 450–7.

17.Koc Y, Unsal A, Basturk T, Sakaci T, Ahbap-Dal E, Sinangil-Arar A, et al. Is there impact of mortality prior hemodialysis therapy in peritoneal dialysis patients? Nefrol Publ Of Soc Esp Nefrol. 2012 May 14;32(3):335–42.

our motto

"I shall either find a way or make one"

-Hannibal Barca


WELCOME

contact us

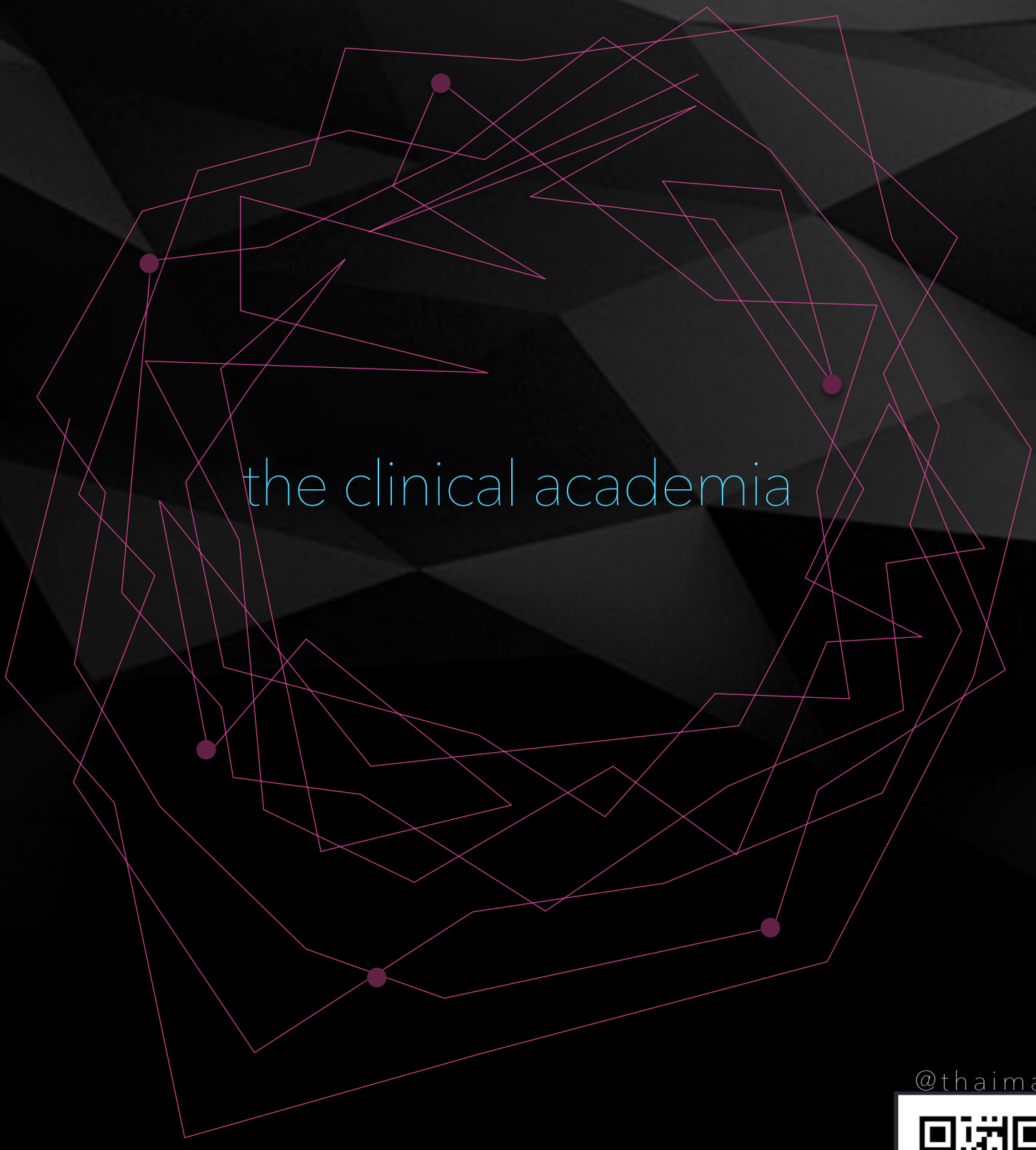
www.theclinicalacademia.org

theclinicalacademia@gmail.com

(+66) 095 356 2522

Official LINE: @thaimaf


I don't want you to be only
a doctor but I also want you
to be a man
A quotation by His Royal Highness Prince Mahidol of Songkla



@thaimaf