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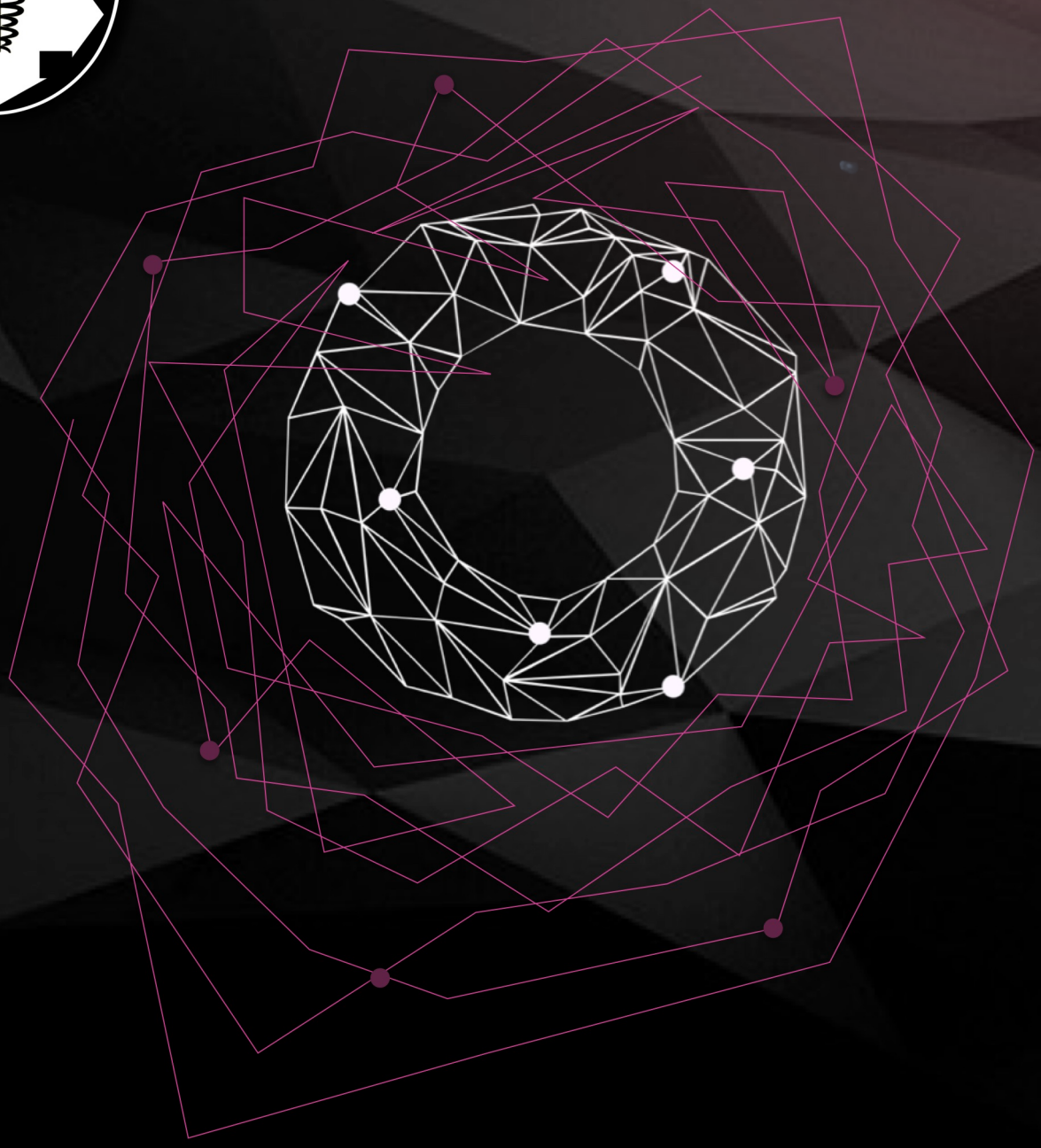

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40 Years of The Clinical Academia
of our passion

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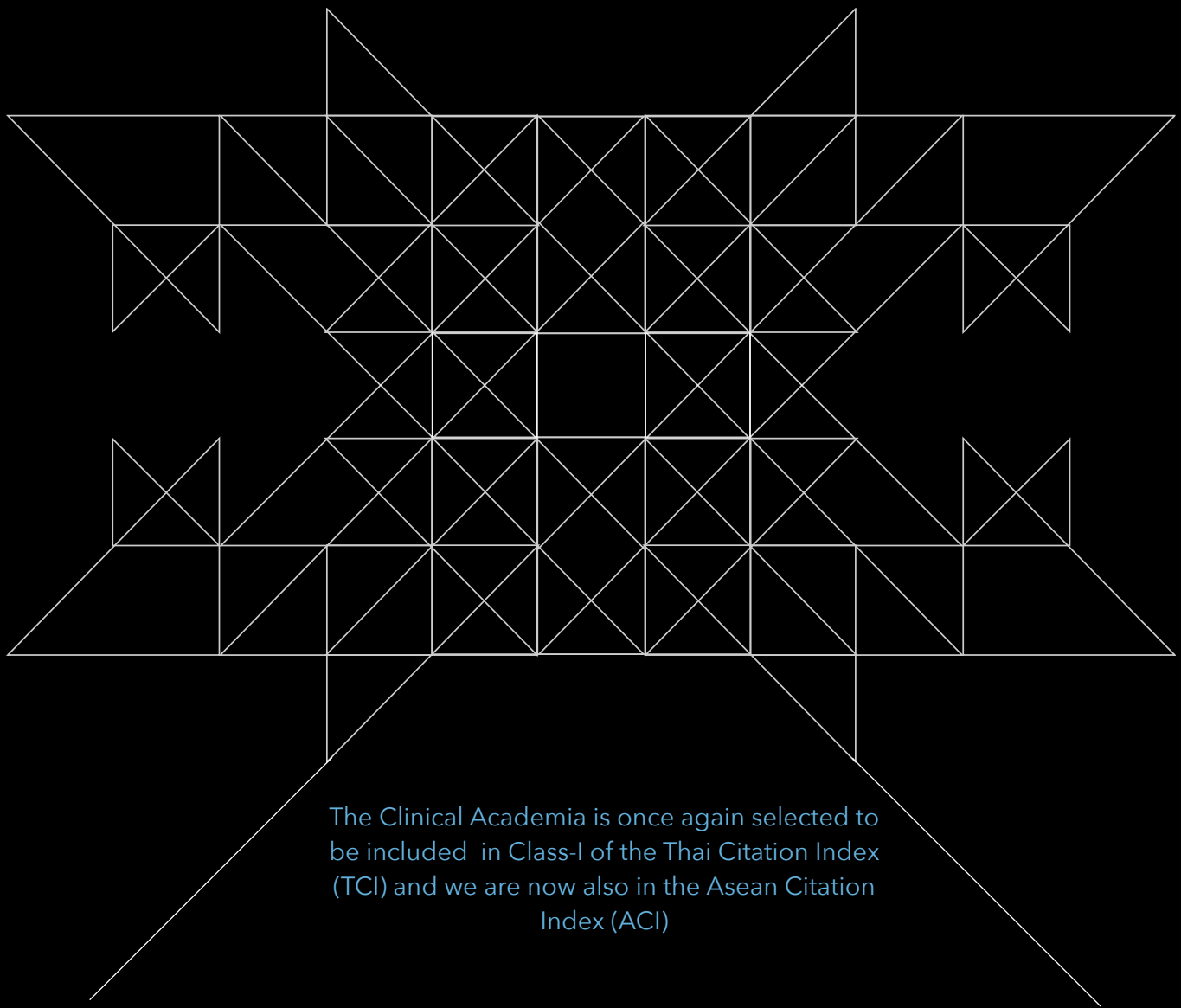
We are the former Khon Kaen Medical Journal

We are now 40 years old.

TCA

We Are a Part of

ASEAN CITATION INDEX



The Clinical Academia is once again selected to be included in Class-I of the Thai Citation Index (TCI) and we are now also in the Asean Citation Index (ACI)

the clinical academia

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The Medical Advancement Foundation & Khon Kaen Medical Education Center
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Message From the Editor

We are about to be 40 in the next issue. We are middle age but we are still excited!

Since the dawn of 2016, The Clinical Academia have been published in English only. We will publish more often, six issues a year or every two months. Ethics will be the area we focus on with the practical strategic plan. As we are a part of Asean Citation Index (ACI) after we have been long in Class I of the Thai Citation Index (TCI) since the beginning of the introduction of classification system in Thailand. High quality is the must. 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 our yellow issue of The Clinical Academia.

Submission & Reviewing process

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Accepted articles are classified into four categories

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

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

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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

Cervical dilatation rate and peripartum complications

ORIGINAL ARTICLE BY

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ABSTRACT

OBJECTIVE

To compare the cervical dilatation rates of nulliparous and multiparous mothers.

METHODS

This was a retrospective cohort study that compared the cervical dilatation rate of nulliparous and multiparous mothers at Khon Kaen Hospital, Thailand between July 2010 and July 2011. The exposure of our interests was parity of the mothers and the primary outcome of our study was cervical dilatation.

RESULTS

In this study, 244 pregnancies were included in the analyses; 117 nulliparous and 127 multiparous. Median cervical dilatation rate from the time of active phase in the first stage of labor to full cervical dilatation was two cm/hr in both group but interquartile range showed a statistically significant difference (P=0.003) that was 1.3–2.5 in nulliparous group and 1.5–3.0 in multiparous group. From the multiple linear regressions with independent variable of maternal age, parity, BMI before pregnancy, BMI before delivery, gestational age, admitting cervical dilatation, total number of pelvic examination, method of augmentation, male sex newborn, newborn birth weight, placenta and cord weight, amniotic fluid clarity and method of membrane rupture; it suggested parity, the total number of pelvic examination, method of membrane rupture, amniotic fluid clarity and admitting cervical dilatation were associated with cervical dilatational rate.

CONCLUSION

The conclusion of the present study was that maternal parity played a major role as its factor influencing the rate of cervical dilatation rate.

INTRODUCTION

Delivery, a common procedure we face yet our understanding in its process is still questionable. Labor and delivery could be divided into four stages; the first, the second, the third and the fourth stage of labor.[1] The first stage of labor is defined as the stage is initiated by a true labor pain and ends at the point where the cervix is fully opened.[1] This stage, a scientific approach was begun by Friedman in 1954 that described characteristics of the sigmoid pattern for labor by graphing cervical dilatation against time.[2] This graphic pattern is still highly recommended and is mostly used as a reference in medical textbooks. However, the study was far too long and repetition of this study is rarely found. One of the studies that related to Friedman's approach was set up in Malaysia to compare cervical dilatation rate in various ethnicities and it seemed that there's no significant difference of the cervical dilatation in any racial groups.[3] However, a research that triggers our mind to concern about this whole method of delivery was the study done by Jun Zhang et al in.[4] Its results pointed out that the active phase of labor may not start until five centimeters of cervical dilation in multiparous and even later in nulliparous. It is contrary to the Friedman's in 1972 that claimed most women would be between 3-5 centimeters.[4] Through this paper, together with few studies that could be used to confirm the rate of cervical dilation in the first stage of labor, this research would be pioneered. Thus, the aim of the present study is to assess the relationship between the parity of pregnancy and rate of cervical dilatation in an active phase of the first stage of labor. The association of the cervical dilatation rate with maternal and neonatal complications was also be assessed.

METHODS

Study design

This was a retrospective cohort study that compared the cervical dilatation rate of nulliparous and multiparous mothers.

Participants and study site

This study was conducted in at Khon Kaen Hospital, a major tertiary care center and teaching hospital in Khon Kaen, Thailand. Records of pregnant women who delivered during July 2010 to July 2011 were reviewed. The data were retrieved from the electronic database; information was obtained from each record regarding characteristic, obstetric and neonatal outcomes.

All women with uncomplicated singleton pregnancy that had antenatal care at the hospital or other health services centers, vertex presentation, term gestational age from 37 to 42 weeks, spontaneous labor onset and spontaneous vaginal delivery were included. Exclusion criteria consist of maternal underlying diseases, complicated pregnancy as gestational diabetes mellitus, pregnancy induced hypertension, oligohydramnios, polyhydramnios, prolonged premature rupture of membrane and early neonatal death (death fetus in utero and stillbirth), previous cesarean section, admitting cervical dilatation less than one centimeter or more than five centimeters, cephalo-pelvic disproportion and other absolute contraindication for normal vaginal delivery as complete placenta previa, herpes simplex virus with active genital lesions or

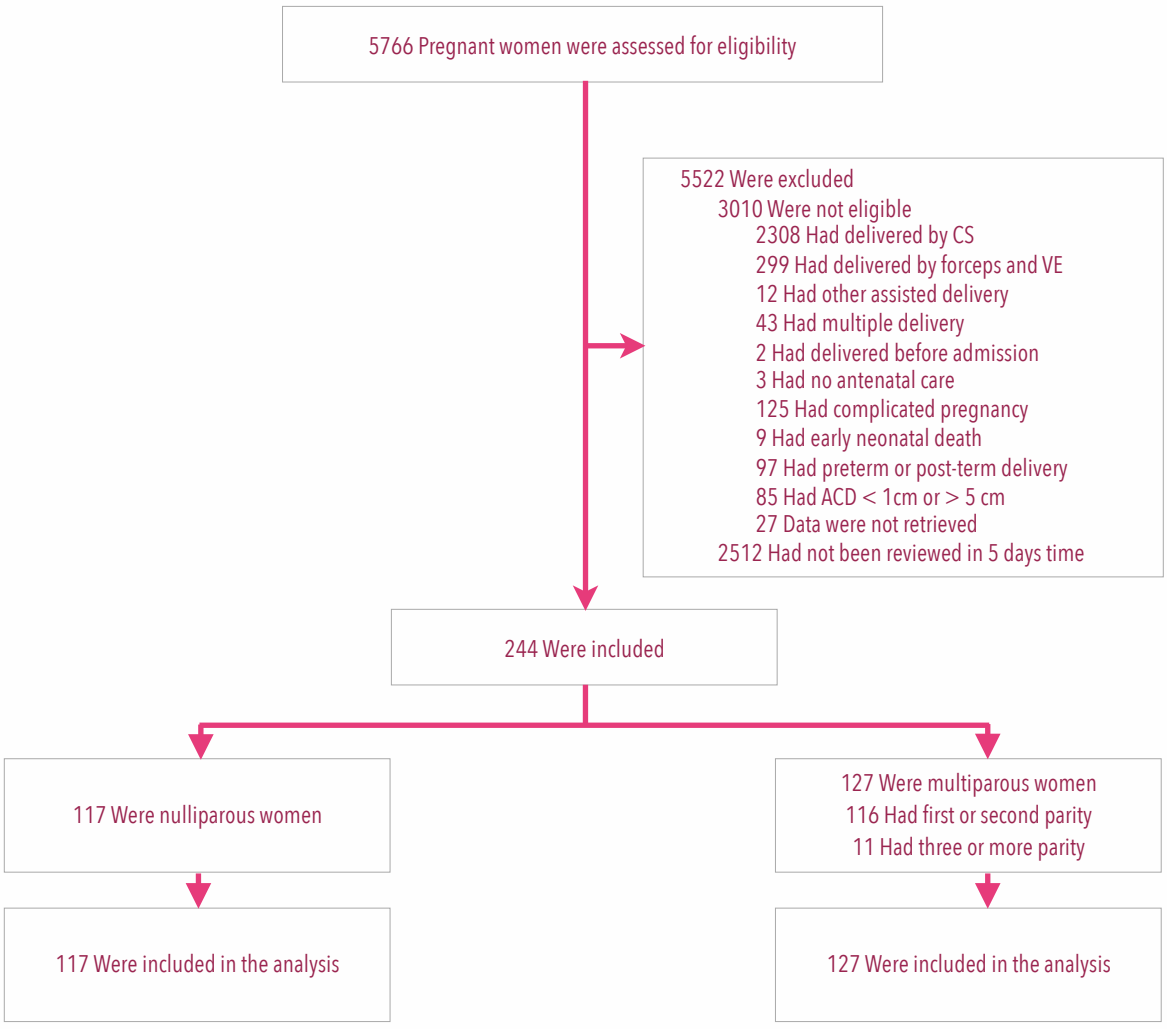

Figure 1. Enrollment and Outcomes.
CS denotes caesarean section, VE vacuum extractor, and ACD admitting cervical dilatation.

prodromal symptoms, previous classic uterine incision or extensive transfundal uterine surgery and untreated human immunodeficiency virus infection.

A total of 244 consecutive labor cases that satisfied the inclusion criteria were divided into two groups by parity: nulliparous group which parity was zero and the other group was multiparous defined as parity one or more. Parturients were reviewed in events of labor documented in the partograph and labor room record. We used WinPepi for sample size calculation based on significant level 5%, power 80% and mean cervical dilatation rate 2.15±1.16 and 2.78±1.61.

Table 1. Characteristics of the included patients

Characteristic	Nulliparous group (n = 117)	Multiparous group (n = 127)	P value
Maternal			
Age-years			< 0.001
Median	22.4	26.3	
Interquartile range	19.4 – 25.2	23.3 – 30.6	
Age – years-no. (%)			< 0.001
Teenage (less than 20)	29 (24.8)	6 (4.7)	
Normal (20 to 35)	85 (72.6)	111 (87.4)	
Elderly (more than 35)	3 (2.6)	10 (7.9)	
Gestational age – wk			0.10
Median	39	39	
Interquartile range	38 – 40	38 – 39	
Body mass index – kg/m2			
Before pregnancy			< 0.001
Median	19.6	21.5	
Interquartile range	18.3 – 21.7	19.8 – 25.2	
Before delivery			0.001
Median	25.6	27.2	
Interquartile range	23.7 – 28.4	25.1–29.8	
Admitting cervical dilatation – cm			0.001
Median	2	3	
Interquartile range	2.0 – 3.5	2 – 4	
Admitting effacement – no. (%)			0.42
25 to 49 %	10 (8.5)	15 (11.8)	
50 to 74 %	38 (32.5)	41 (32.3)	
75 to 99 %	53 (47.0)	49 (38.6)	
100%	14 (12.0)	22 (17.3)	
Admitting station – no. (%)			0.10
-3 to -1	52 (44.4)	70 (55.1)	
0 to 2	65 (55.6)	57 (44.9)	

Table 1. (Continued.)

Characteristic	Nulliparous group (n = 117)	Multiparous group (n = 127)	P value
Method of augmentation – no. (%)			0.16
Oxytocin (Syntocinon®)	51 (43.6)	53 (41.7)	
Misoprostol (Cytotec®)	6 (5.1)	2 (1.6)	
None	58 (49.6)	72 (56.7)	
Combined Oxytocin and Misoprostol	2 (1.7)	0	
Method of membrane rupture – no. (%)			0.23
Spontaneous	40 (34.2)	53 (41.7)	
Artificial	77 (65.8)	74 (58.3)	
Total number of pelvic exams in first stage – times			0.20
Median	4	4	
Interquartile range	3 – 5	3 – 5	
Neonatal			
Male sex – no. (%)	64 (54.7)	62 (48.8)	0.36
Birth weight – kg	3.1 ± 0.3	3.2±0.4	<0.001
Birth weight < 2.5kg – no. (%)	6 (5.1)	3 (2.4)	0.32
Amniotic fluid clarity – no. (%)			0.24
Clear	96 (84.2)	111 (88.8)	
Mild meconium	12 (10.5)	6 (4.8)	
Thick meconium	6 (5.3)	8 (6.4)	
Placenta and cord weight – g			0.50
Median	600	600	
Interquartile range	600 – 700	500 – 700	
Congenital anomaly – no. (%)	0	2 (1.6)	0.50

Estimate sufficient sample size is 79 pregnancy women per group were large enough to detect differences in the rate of cervical dilatation during the active phase of labor. For data analysis, coded data were analyzed by statistical package for social sciences

Exposure and outcome measure

Our exposure of interest of our study was maternal parity; nulliparous vs. multiparous. The main outcome was the rate of cervical dilatation during the active phase of labor and the effect of a number of parity on cervical dilatation, the secondary

Table 2. Rate of cervical dilatation according to number of parity

Variable	Nulliparous group (n= 117)	Multiparous group (n = 127)	P Value
Active phase to fully dilatation (10 cm)			
Total cervical dilatation – cm			
Median	6	6	0.02
Interquartile range	5 – 6	5 – 6	
Total time – hr			
Median	3	2	0.04
Interquartile range	2 – 4	1 – 4	
Cervical dilatation rate – cm/hr			
Median	2	2	0.003
Interquartile range	1.3 – 2.5	1.5 – 3.0	

outcomes were perinatal outcomes included maternal and neonatal complications that were assessed the association with progress of cervical dilatation.

Data collection

Characteristics of the mother and neonate were reviewed from the medical records onto a spreadsheet. Collected variables included age, gestational age, body mass index (BMI), effacement and dilation of the cervix at the time of admission, methods of augmentation, methods of ruptures, neonatal weight, gender, clarity of the amniotic fluid, and placenta and cord weight.

Statistical analysis

All data were cleaned before the analyses. Categorical variables were described as number and percentage while non-normally distributed variables were summarized using median and interquartile range. Comparing the two groups regarding non-normally distributed variables were analyzed using Mann Whitney U test and chi-square for categorical variables. Multivariable analysis was used to identify factors might affect the rate of dilatation fo the cervix.

RESULTS

Characteristics of participants

In this study, 5,766 records of parturients who delivered at Khon Kaen Hospital between July 2010 and July 2011 were preliminary included. At the end, a total of 244 pregnancies were left for the analysis (Figure 1). This group was divided for further analysis; nulliparous vs. multiparous group. Characteristics of the first stage of labor are summarized in Table 1.

Table 3. Association between the cervical dilatation rate and maternal and neonatal complication

Variable	Nulliparous group				Multiparous group				P Value*
	Cervical dilatation rate (cm/hr)								
	<1.5	1.5-2	>2	P value	<1	1.5-2	>2	P value	
Maternal									
1st degree perineal laceration–no. (%)	31 (96.9)	39 (86.7)	39 (97.5)	0.02	15 (100.0)	47 (92.2)	59 (96.7)	0.36	0.81**
Episiotomy wound infection–no. (%)	0	1 (2.2)	0	1.00	0	0	1 (1.6)	1.00	1.00
Uterine atony – no. (%)	3 (9.4)	2 (4.4)	0	0.18	0	6 (11.8)	5 (8.2)	0.40	0.17
Postpartum hemorrhage – no. (%)	1 (3.1)	1 (2.2)	0	0.74	0	2 (3.9)	1 (1.6)	0.72	1.00
Length of stay –days-no. (%)				0.22				0.43	0.44
2-3	10 (31.3)	23 (51.1)	18 (45.0)		6 (40.0)	30 (58.8)	29 (47.5)		
4-5	20 (62.5)	20 (44.4)	22 (55.0)		9 (6.0)	20 (39.2)	28 (45.9)		
6 or more	2 (6.3)	2 (4.4)	0		0	1 (2.0)	4 (6.6)		
Neonatal									
Amniotic fluid – no. (%)				0.68				0.12	0.24
Clear	26 (89.7)	37 (82.2)	33 (82.5)		12 (80.0)	41 (83.7)	58 (95.1)		
Mild meconium	1 (3.4)	6 (13.3)	5 (12.5)		1 (6.7)	3 (6.1)	2 (3.3)		
Thick meconium	2 (6.9)	2 (4.4)	2 (5.0)		2 (13.3)	5 (10.2)	1 (1.6)		
Admission to NICU or NB – no. (%)	0	2 (4.4)	0	0.33	0	2 (3.9)	1 (1.6)	0.72	1.00

*P value show difference between nulliparous and multiparous group

**P value of first to fourth degree of perineal laceration between nulliparous and multiparous group

NICU denotes neonatal intensive care unit, NB newborn ward.

Over all the study population, its median and interquartile range of these was 24.6 years (20.9-28.6) in age, 39 weeks (38-40) in gestational age, 26.7 kg/m2 (24.2-29.1) in body mass index before delivery, 4 times of pelvic examination (3-5), 3 centimeters admitting cervical dilatation (2-4) and 600 grams (550-700) in placenta and cord weight. In neonatal weight, its mean was 3.1 kilograms with 0.38 kilograms as its standard deviation. Comparison among the nulliparous group and the multiparous group showed a statistically significant difference in maternal age (P<0.001). The median and the interquartile range were 22.4 (19.4–25.2) and 26.3 (23.3–30.6) respectively. Groups of age were categorized into 3 groups, the teenage, the normal age and the elderly pregnancy. It was shown that the dominant group in both nulliparous and multiparous group was the normal age pregnancy (n=85, 72.6% in the nulliparous group; n=111, 87.4% in the

Table 4. Factor affecting the third stage of labor

Factors	Coefficients*	P value
Maternal age – yr	0.030	0.636
Gestational age – wk	-0.061	0.296
Parity	0.205	0.002
Body mass index before pregnancy – kg/m2	-0.013	0.860
Body mass index before delivery – kg/m2	-0.032	0.659
Neonatal Birth weight – kg	-0.052	0.447
Placenta and cord weight – g	-0.086	0.175
Total number of pelvic exams in first stage – times	-0.423	< 0.001
Method of augmentation	-0.019	0.736
Male sex	0.087	0.137
Method of membrane rupture	-0.156	0.008
Amniotic fluid clarity	-0.127	0.027
Admitting cervical dilatation – cm	-0.237	< 0.001

Dependent variable: Median cervical dilatation rate

R Square = 0.365

*Standardized coefficients

multiparous group); the teenage pregnancy seemed to be higher in the nulliparous group and it was statistically significant with P<0.001 (n=29, 24.8%; n=6, 4.7%, orderly). Gestational age median and interquartile range showed no significant with P=0.10, the median and interquartile range was 39 (38–40) in the nulliparous group and 39 (38–39) in the multiparous group.

The relationship between body mass index before pregnancy and before delivery and parity showed statistical significant with P<0.001. Either before pregnancy or before delivery, it seemed that the number the parity, the higher the BMI. The median and interquartile range of BMI before pregnancy compared with nulliparous group and multiparous group were 19.6 (18.3–21.7) and 21.5 (19.8–25.2); median and interquartile range of BMI before delivery compared with the parity group were 25.6 (23.7–28.4) and 27.2 (25.1–29.8) respectively. Admitting cervical dilatation size compared with parity groups showed a statistical significance with P<0.01. The median and interquartile range was 2 (2.0–3.5) and 3 (2–4) orderly. Other admitting records such as admitting effacement and admitting station showed statistical insignificant with P=0.42 and P=0.10, respectively. Numbers and percentages of the method of augmentation using oxytocin compared with the nulliparous group and multiparous were 51 (43.6%) and 53 (41.7%). Most cases had artificial membrane rupture with numbers and percentages of 77 (65.8%) and 74 (58.8%) in nulliparous groups and multiparous group, respectively. Considering P=0.23, it seemed that there was no statistical significance between the

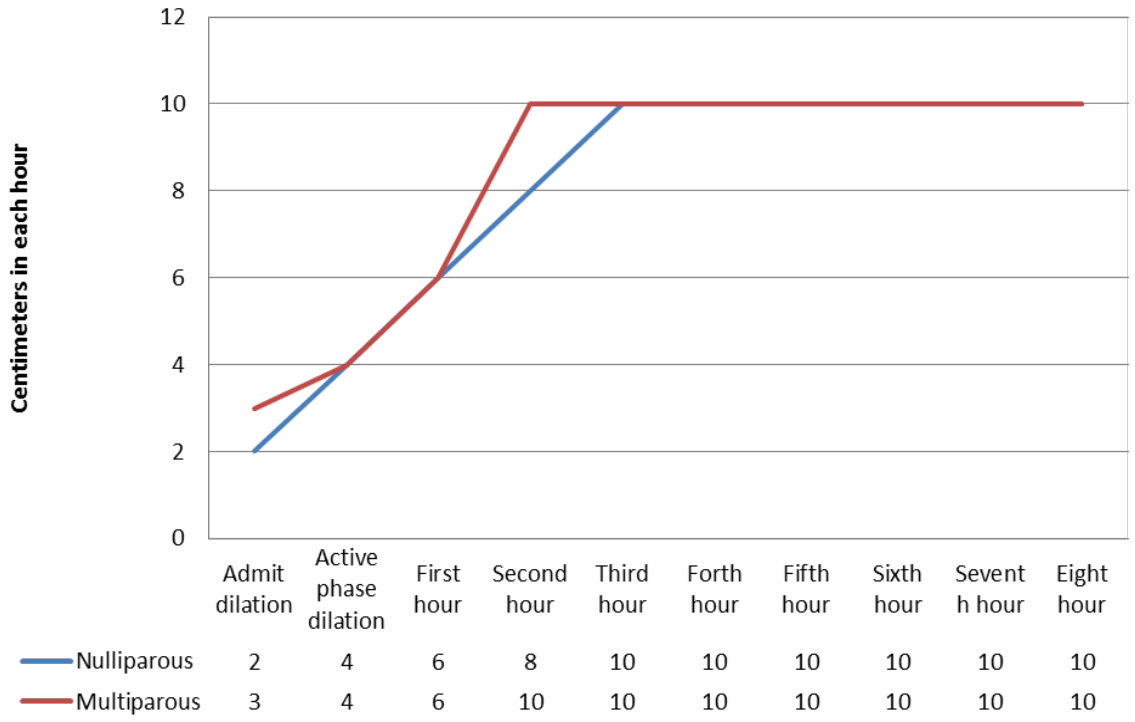

Figure 2: Linear graph of cervical dilatational diameter in each hour of nulliparous and multiparous group.
In this linear graph of cervical dilatation diameter in each hour (partogram of active phase in the first stage of labor), the multiparous group shows some difference in cervical dilatational rate where it reached the fully diameter of the cervix faster than in the nulliparous group. Furthermore, the central value of the cervical dilatation at admission in the multiparous group seems to be higher than in the other group.

two groups. Furthermore, numbers of the pelvic examination were also measured and compared with the groups of parity. Medians of pelvic examination were 4 and the interquartile ranges shared the same value of 3 to 5, P=0.20 which had no significance. In neonatal outcomes, the only part that turned to have statistical significance was the neonatal birth weight; the number of parity, the heavier the newborn. For the other variables such as newborn sex, newborn with lesser weight than 2.5 kg and amniotic fluid clarity, their P= 0.36, 0.32 and 0.24 compared to groups of parity respectively. Placenta and cord weight, its median and interquartile range in each parity groups were 600 (600-700) and 600 (500-700). Lastly, there was only two newborn with the club foot that was not statistically significant between the two groups.

Outcomes

Median cervical dilatation rate from the time of active phase in the first stage of labor to full cervical dilatation was two cm/hr in both group but interquartile range showed a statistically significant difference (P=0.003) that was 1.3–2.5 in nulliparous group and 1.5–3.0 in multiparous group (Table 2). In Figure 2, partograms were plotted using data collected by the group of parity which, again, are nulliparous group and

multiparous group, compared to cervical dilatation in each hour after entering the active phase in the first stage of labor.

In Table 3. showed maternal and neonatal outcome, the comparison was done between two groups of parity; nulliparous and multiparous group. Each group was divided, once again, by mean cervical dilatation rate into three groups which are lesser than 1.5 centimeters, 1.5 to 2 centimeters and higher than 2 centimeters. There was some significant relationship between groups of cervical dilatation rate in nulliparous group and the first degree of perineal laceration (P=0.02). Following variables; degree of perineal laceration, length of stay in the hospital, amniotic fluid clarity, incidence of episiotomy wound infection, uterine atony, postpartum hemorrhage and admission to neonatal intensive care unit (NICU) or newborn ward, were so be compared between groups of parity, and the p-value were 0.81, 0.44, 0.24, 1.00, 0.17, 1.00 and 1.00, orderly. There were ten patients with the second degree of episiotomy tear wound; only one and two patients had the third and fourth degree of episiotomy tear wound, respectively. There was four newborn with APGAR score at one minute less than seven.

Further analysis was done using the multiple linear regressions with independent variable of maternal age, parity, BMI before pregnancy, BMI before delivery, gestational age, admitting cervical dilatation, total number of pelvic examination, method of augmentation, male sex newborn, newborn birth weight, placenta and cord weight, amniotic fluid clarity and method of membrane rupture; the dependent factor was the median of cervical dilatational rate. In this extended analysis, it suggested multiple independent variables that affected the median cervical dilatational rate which was parity, the total number of pelvic examination, method of membrane rupture, amniotic fluid clarity and admitting cervical dilatation with R-square of 0.365. The maternal parity played a major role as its factor influencing the rate of cervical dilatation rate, illustrated in Figure 2, together with the rest four variables.

DISCUSSION

In this study of parity of the mother in relation to mean cervical dilatation rate during the first stage of labor, an answer has been seeking out with the median and interquartile range of mean cervical dilatation rate of 2 (1.3-2.5) and 2 (1.5-3.0) in nulliparous and multiparous group respectively with P=0.003. However, according to prior study of Friedman (1972), this study suggested difference in 2 groups of parity in their rate of cervical dilatation; the mean cervical dilatation rate of nulliparous group was around 3 centimeters per hour with minimum rate of 1.2 up to 6.8 centimeters per hour but multiparous group had different value with minimum rate of 1.5 centimeters per hour and higher.1 Another study was a pilot study from held in the North America by Texas Woman's University.3 In order to evaluate if the Friedman's labor curve should be revised. The result of this pilot study is similar to Friedman's study, however, a wider range of normal was found in cases included in this current study and revised of Friedman's labor curve is recommended.3 From our study, the trend of cervical dilatation rate pointed out that both parity groups had nearly the same cervical dilatation rate around 2 centimeters per hour using median as it's mathematic center value due to non-normal distribution of the cervical dilatation rate data. Furthermore, cervical dilatation

entering the active phase of first stage of labor in this study had median and interquartile range around 4 centimeters (4–5) in both groups, despite the study of Jun Zhang et al. which suggest that the diameter entering the active phase of the first stage of labor in multiparous group is around 5 centimeters but in nulliparous group is unclear. Thus, it seems that there is no difference in diameter of the cervix during entering active phase of the first stage of labor. Its difference in the result of our study compares to Friedman's study and Jun Zhang et al may cause for many reasons, firstly by its study itself. Before starting this study, a pilot was done with 83 nulliparous women and 61 multiparous women in search for an efficient sample size. Using WinPepi ver.1.38, the sample size is adequate with only 38 pregnant women in each group.

Though the required population is low, an account of 117 nulliparous and 127 multiparous pregnancies was included. Secondly, our study was set up in a tertiary care hospital which differs from the most study which had multicenter information supply; variation of maternal characteristics may be different. Furthermore, errors should also be considered in this study; standard of cervimetric measurement, cut point of changing from latent to the active phase of the first stage of labor and partogram plotting by the labor room personnel. Errors that have been mentioned above are such a critical weak point of this retrospective study. However, for further study in the near future, it is recommended that a cohort study should be done by specific labor room personnel to standardize the measurement of the cervical dilatation in each hour and to have the partogram plot in the same direction as it should be. Referring to table 4, a multiple linear regression was done suggesting that parity does play role in cervical dilatation rate (P=0.002) together with other variance such as a total number of pelvic examination, method of membrane rupture, amniotic fluid clarity and admitting cervical dilatation with R-square of 0.365.

In conclusion, this study was done in order to answer if the cervical dilatational rate differed in nulliparous and multiparous group and to revise the study of Friedman (1954). The result shows statistical significant with P=0.003 with the mean rate of 2.15 and 2.78 centimeters per hour in nulliparous and multiparous group orderly. Confirming with the multiple linear regressions, a number of parities still showed statistical significance of P=0.002. These results, even though, shows some degree of difference in both groups as it had been said in the previous study; but the trend of the cervical dilatational rate in nulliparous group is lower than its original study (mean of cervical dilatation average about 3 centimeters per hour). Albeit some difference was seen in cervical dilatation rate between two groups, cervical dilatation during entering an active phase in the first stage of labor seems to have no significant difference between them.

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REFERENCES

1. Normal Labor: Mechanism and Duration by John B. Liao, MD, Catalin S. Buhimschi, MD, Errol R. Norwitz, MD, PhD. Division of Reproductive Sciences, Department of Obstetrics, Gynecology and Reproductive Sciences, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06520, USAObstet Gynecol Clin N Am 32 (2005) 145–164

2. Williams Obstetrics, Twenty-Third Edition. Copyright © 2010, 2005, 2001 by The McGraw-Hill Companies. Chaper 17; Normal labor and delivery

3. Characteristics of Normal labor among different racial groups in Malaysia by M.A. Lim (lecturer), W.P. Wong (lecturer) and T.A. Sinnathuray, professor. Department of Obstetrics and Gynecology, university of Malya Pantai Calley, Kuala Lumpur, Malaysia

4. The Natural History of the Normal First Stage of Labor. Jun Zhang, PhD, MD, James Troendle, PhD, Rafael Mikolajczyk, MD, MSc, Rajeshwari Sundaram, PhD, Julie Beaver, MS, and William Fraser, MD, MS. OBSTETRICS & GYNECOLOGY,VOL. 115, NO. 4, APRIL 2010

Obesity as a risk factor for nasal polyps

ORIGINAL ARTICLE BY

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ABSTRACT

OBJECTIVE

To identify the association between obesity and nasal polyps.

METHODS

This is a hospital-based, unmatched, nested case-control study of eligible 233 cases of nasal polyps and 240 controls those admitted to Khon Kaen Hospital at the same period. We reviewed medical records and collected data on age, sex, smoking, underlying disease, body weight, height and body-mass index (BMI). We evaluated the risk of nasal polyps development in patient with and without obesity defined using BMI.

RESULTS

Obesity did not increase the risk of nasal polyps after adjusting for age, sex, smoking, hypertension, diabetes mellitus, allergic rhinitis and asthma (adjusted odds ratio (AOR) 1.16; 95% confidence interval (CI) 0.60 to 2.24). It also found that the factors tended to increase the risk of developing nasal polyp were male (AOR, 2.11; 95% CI 1.32 to 3.37), older age (AOR, 1.02; 95% CI, 1.01 to 1.04), allergic rhinitis (AOR, 23.74; 95% CI, 3.08 to 182.78), asthma (AOR, 16.32; 95% CI, 2.09 to 127.39). However, smoking, hypertension and diabetes mellitus were not associated with developing nasal polyps.

CONCLUSION

Obesity is not associated with increase the risk of developing nasal polyps after adjusting for other risk factors.

BACKGROUND

Nasal polyps are a common disorder of the upper airway, occurring in 1% to 4% of the general population, they are the result of chronic inflammation of the paranasal sinuses.[1,2] Patients with the polyps are likely to complain of a constellation of symptoms, including diminished olfaction, headache, and postnasal drip.[3] A previous study suggests that obesity is associated with increased inflammation e.g., leptin and other adipokines in serum and adipose tissue may be important mediators of airway disease.[4] Serum leptin levels might have a role in poor asthma control in obese patients.[5] This findings support that obesity might associate with severe asthma.[6,7] The current data demonstrate an increased prevalence of adult obesity associated with both allergic rhinitis and chronic rhinosinusitis.[8] Individuals who experience astham or allergic rhinitis tend to have chronic sinusitis and nasal polyps.[9]

Although these factors have been found to increase the risk for the polyps, but no study has shown an association between obesity and nasal polyps. Therefore this study was designed to determine the risk of developing nasal polyps linked to patient with increased body-mass index (BMI) for early detection and treatment.

METHODS

STUDY DESIGN

This study was designed as a hospital-based, unmatched, nested case-control study to determine the association between obesity and risk of developing nasal polyps.

PATIENTS

For cases, we identified all in-patients aged 10 years or more who had a recorded diagnosis of nasal polyps (both unilateral and bilateral) by otolaryngologist admitted between January 2011 and December 2013 from the hospital-based, online medical records server of Khon Kaen Hospital, Thailand. We identified 247 potential records as on 31 December 2013. Of these, we reviewed and confirmed the eligibility of 233 (94%) cases. Two hundred and forty controls were randomly selected using online-generated number (via www.random.org) from the given 111,775 lists of in-patient records from those admitted to the hospital at the same period of the cases. And children who aged below 10 years were not considered for inclusion in the study.

DATA COLLECTION

For all patients we reviewed and verified each medical records. Later we collected data of the individual in relation to age, sex, smoking status, underlying disease e.g., hypertension, diabetes, dyslipidemia and autoimmune disease, allergic rhinitis, asthma, chronic rhinosinusitis, weight, height and body mass index (BMI)

Statistical analysis

All data were double entered and cleaned. Later frequency tables for all variable were generated to identify wild and extreme values. For the outcome analysis, patients were divided according to the occurrence of nasal polyps into two groups, with and without nasal polyps. Our primary outcomes is determine the risk of nasal polyps development in patient with and without obesity. Data were analyzed using PASW statistic 18 Release 18.0.0

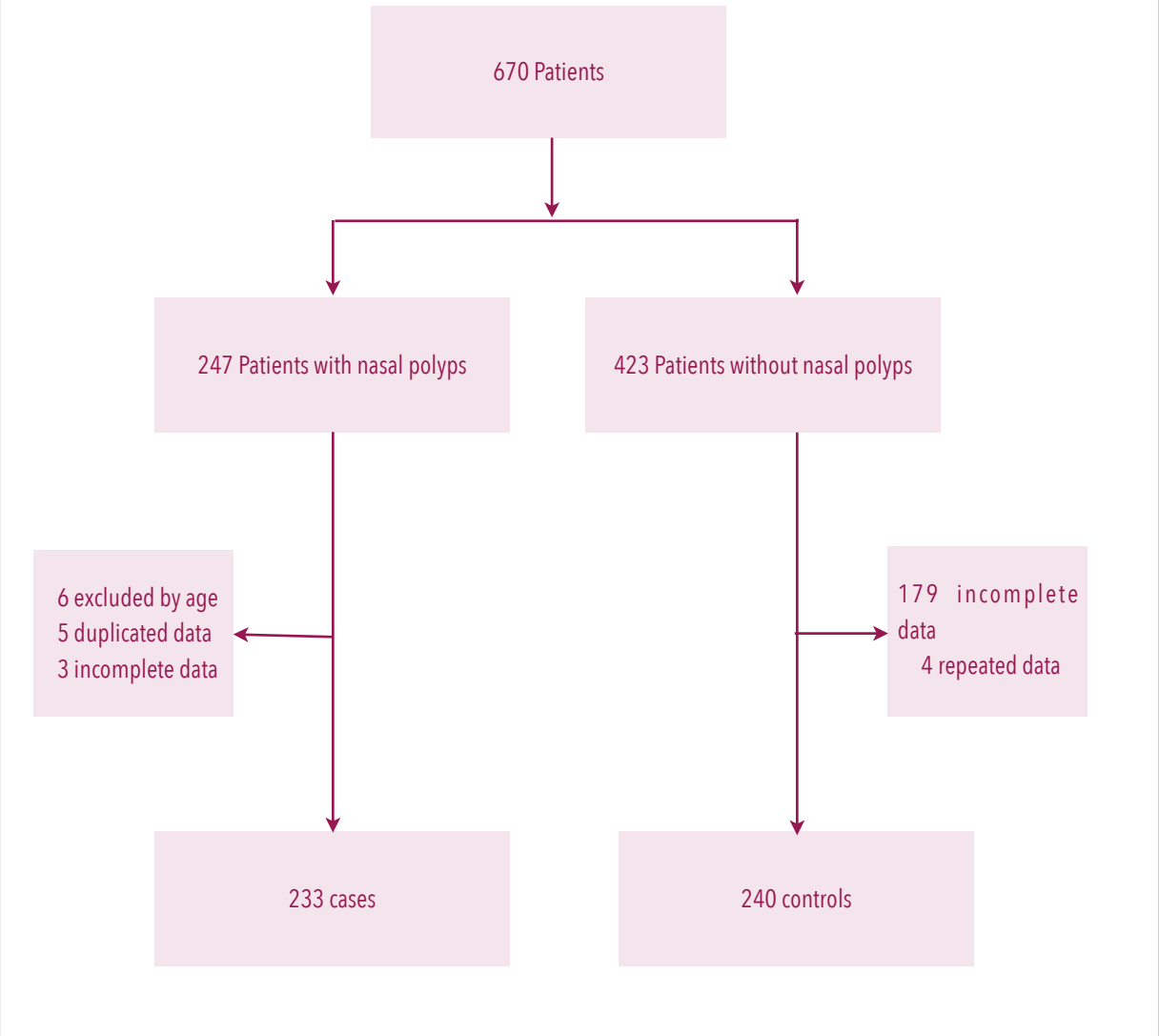

Figure 1. Study Flow Chart

(Jul 30, 2009). We used chi-square for analysis sex, smoking, hypertension, diabetes mellitus, allergic rhinitis, asthma, chronic rhinosinusitis and Fisher's exact test for analysis dyslipidemia and autoimmune. Mann-Whitney U test was used for analysing age, weight, height and BMI. For risk interpretation, crude odds ratio (COR) was calculated with its 95% confidence interval (CI). Binary logistic regression was used to estimate the adjusted odds ratio (AOR) and its 95% CI. P less than 0.05 were considered to indicate statistical significance.

RESULTS

In the present study, 247 patients with nasal polyps were identified as cases from the medical record of Khon Kaen Hospital during 2011-2013. However,

Table 1. Characteristics of Patients with and without Nasal Polyps.

Characteristic	Patients with nasal polyps (N = 233)	Patients without nasal polyps (N = 240)	P Value
Age-yr			0.001
Median	47.2	42.6	
Interquartile range	33.8-59.7	30.4-53.0	
Male sex-no. (%)	136 (58.4)	104 (43.3)	0.001
Smoking-no. (%)	73 (31.3)	70 (29.2)	0.608
Underlying disease-no. (%)			
Hypertension	40 (17.2)	28 (11.7)	0.088
Diabetes mellitus	16 (6.9)	19 (7.9)	0.663
Dyslipidemia	3 (1.3)	4 (1.7)	1.000
Autoimmune disease	0	1 (0.4%)	1.000
Allergic rhinitis-no. (%)	20 (8.6)	1 (0.4)	<0.001
Asthma-no. (%)	17 (7.3)	1 (0.4)	<0.001
Chronic rhinosinusitis-no. (%)	29 (12.4)	0	<0.001
Weight-kg			0.007
Median	60	56	
Interquartile range	53-68	50-65	
Height-m			0.063
Median	1.6	1.6	
Interquartile range	1.6-1.7	1.6-1.7	
Body-mass index-no. (%)			0.274
<18.5	29 (12.4)	35 (14.6)	
18.5-22.9	92 (39.5)	111 (46.3)	
23.0-24.9	45 (19.3)	36 (15.0)	
≥25	67 (28.8)	58 (24.2)	
Median	22.8	21.7	0.045
Interquartile range	20.0-25.6	19.5-25.0	

*The body-mass index is the weight in kilograms divided by the square of the height in meters.

Table 2. Odds Ratio of Variable in Patients with and without Nasal Polyps.

Variable	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Male sex-no. (%)	1.83 (1.27-2.64)	2.11 (1.32-3.37)
Age-yr-median (IQR)	1.02 (1.01-1.03)	1.02 (1.01-1.04)
Smoking-no. (%)	1.11 (0.75-1.64)	0.69 (0.41-1.14)
Hypertension-no. (%)	1.57 (0.93-2.64)	1.19 (0.64-2.23)
Diabetes mellitus-no. (%)	0.86 (0.43-1.71)	0.88 (0.31-1.49)
Allergic rhinitis-no. (%)	22.44 (2.99-168.64)	23.11 (2.99-178.44)
Asthma-no. (%)	18.81 (2.48-142.54)	16.26 (2.08-127.13)
Body-mass index-no. (%)		
<18.5	1.00	1.00
18.5-22.9	1.00 (0.57-1.76)	0.94 (0.51-1.72)
23.0-24.9	1.51 (0.78-2.92)	1.28 (0.63-2.62)
≥25	1.39 (0.76-2.55)	1.16 (0.60-2.24)

11 cases were omitted due to duplication of the records, age below 10 years and incomplete medical records. At the end, 233 cases were included in the analysis. Moreover, 240 were randomly selected from the record of in-patients of 111,775 records (Figure 1).

Generally, a bit more than half were male with a median age of 44.9 years old. Only 30% of them were smokers. Hypertension was the most common underlying disease among them. Roughly 10% of the patients had some forms of allergic conditions.

Comparing between cases and controls, the former group tended to be older age (P=0.001), heavier (P=0.007) and more proportion of male (P=0.001). However BMI, smoking, height and underlying diseases tended to be similar between the two groups (Table 1).

From the calculation of COR, it found that male had higher risk of developing nasal polyps (COR, 1.83; 95% CI, 1.27 to 2.64) as well as older age (COR, 1.02; 95% CI, 1.01 to 1.03) and comorbidities such as allergic rhinitis (COR,22.44; 95% CI 2.99 to 168.64) and asthma (COR, 1; 81 95% CI, 2.48 to 142.54) (Table 2). However, smoking, hypertension and diabetes mellitus seemed to be not associated with the risks of developing nasal polyps. These findings were also confirmed from the binary logistic regression which found that independent risk factors for developing nasal polyps were male (AOR, 2.11; 95% CI, 1.32 to 3.37), older age (AOR, 1.02; 95% CI, 1.01-1.04), allergic rhinitis (AOR, 23.11; 95% CI, 2.99 to 178.44), asthma (AOR, 16.26; 95% CI, 2.08 to 127.13). However, obesity (BMI> 25 kg/m2) was not the risk of developing nasal polyps (Table 2).

Table 3. Odds Ratio of Subgroup Analysis in Patient with Obesity.

Variable	Obesity with nasal polyps	Obesity without nasal polyps	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Age-yr-median (IQR)	44.3 (33.6-54.2)	52.03 (39.5-62.5)	1.04 (1.01-1.06)	1.03 (1.01-1.06)
Male sex-no. (%)	37 (55.2)	21 (36.2)	2.17 (1.06-4.47)	1.47 (0.6-3.47)
Smoking-no. (%)	20 (29.9)	8 (13.8)	2.66 (1.07-6.62)	2.01 (0.69-5.85)
Hypertension-no. (%)	20 (29.9)	11 (19.0)	1.82 (0.79-4.21)	1.84 (0.67-5.04)
Diabetes mellitus-no. (%)	5 (7.5)	7 (12.1)	0.59 (0.18-1.96)	0.34 (0.09-1.35)

According to Table 3, we calculated COR and AOR to determine the risk of nasal polyps only in patients with obesity, the result of COR shows that older age (COR, 1.04; 95% CI, 1.01-1.06), male sex (COR, 2.17 95% CI, 1.06 to 4.47), and smoking (COR, 2.66 95% CI, 1.07 to 6.62) were significant risk factors for developing nasal polyps. Nevertheless, AOR showed only the older age was the significantly increase risk of nasal polyps (AOR, 1.04; 95% CI, 1.01 to 1.06).

DISCUSSION

SUMMARY OF MAIN FINDINGS

We found that the risk of nasal polyps between patients with lower BMI and higher BMI was similar. On the other hand we also found important higher risk of nasal polyps in patients with male sex, older age and comorbidities of allergic rhinitis or asthma that harmonized with evidence-based medicine at present.

STRENGTHS AND LIMITATIONS OF THE STUDY

The important strengths of this study are that we study relatively rare conditions, and no previous study shown the association between nasal polyps and obesity before, which has been poorly understood. However, this study was carried out using only patients who admitted into hospital; therefore, findings are unlikely to be applicable to the general population. And the sample size also small, leading to underpower of statistics.

COMPARISON WITH OTHER STUDIES

In the present study we found no evidence of an increased risk of nasal polyps associated with obesity. According to other studies only showed that obesity is associated with rhinitis,[10] more severe and poorly controlled asthma.[11] Moreover abnormal geometry, shape and the airflow pressure values of the nasal cavity is not affected by increasing BMI.[12,13] We found an association between nasal polyps and male sex, as well as older age and some comorbidities, especially allergic rhinitis and asthma. Our result shows a 2-fold increased odds of nasal polyps in male (odds ratio 2.16, 95% confidence interval 1.35 to 3.44). This is consistent with previous study, there is a marked male preponderance of nasal polyposis.[14] Furthermore, in our study also showed the statistically significant of nasal polyps and older age. Similar to some studies reported that nasal polyps was the most common diagnosis in 40-59 years or greater than 60 years.[15,16] And we also

found the association between nasal polyps and some airway diseases. Allergic rhinitis was strongly associated with nasal polyps as other studies have shown the same result,[17,18,19,20,21] corresponded to asthma.[22,23]

CONCLUSIONS AND IMPLICATIONS

To summarise, our result suggest that obesity may not be the risk of nasal polyps. However, this information will need to confirm by further research. Our findings may help the management of nasal polyps among patients with obesity. Because we found that old age, male sex, allergic rhinitis, asthma and chronic rhinosinusitis can increase the risk of developing nasal polyps. So we believe that our findings are generalisable to those patients. And then the general practitioners should realise about patient's allergic control to prevent occurring of nasal polyps. For the future research, our study laid the groundwork for future studies related to nasal polyps and obesity. Because the current study has inadequate sample size and variables for analysis, so the future study would be required to prevent these pitfalls.

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REFERENCES

1. Levy BJ, Knapp RR. Man with epistaxis and dysphagia. Benign nasal polyp. Ann Emerg Med. 2013 Nov;62(5):466, 505.
2. Newton JR, Ah-See KW. A review of nasal polyposis. Ther Clin Risk Manag. 2008 Apr; 4(2):507–12.
3. DeMarcantonio MA, Han JK. Nasal polyps: pathogenesis and treatment implications. Otolaryngol Clin North Am. 2011 Jun;44(3): 685–695, ix.
4. Sideleva O, Suratt BT, Black KE, Tharp WG, Pratley RE, Forgione P, et al. Obesity and asthma: an inflammatory disease of adipose tissue not the airway. Am J Respir Crit Care Med. 2012 Oct 1;186(7):598–605.
5. Kilic H, Oguzulgen IK, Bakir F, Turktas H. Asthma in obese women: outcomes and factors involved. J Investig Allergol Clin Immunol. 2011;21(4):290–6.
6. Gibeon D, Batuwita K, Osmond M, Heaney LG, Brightling CE, Niven R, et al. Obesity-associated severe asthma represents a distinct clinical phenotype: analysis of the British Thoracic Society Difficult Asthma Registry Patient cohort according to BMI. Chest. 2013 Feb 1;143(2):406–14.
7. Delgado J, Barranco P, Quirce S. Obesity and asthma. J Investig Allergol Clin Immunol. 2008;18(6):420–5.
8. Bhattacharyya N. Associations between obesity and inflammatory sinonasal disorders. The Laryngoscope. 2013 Aug; 123(8):1840–4.
9. Torpy JM, Lynm C, Golub RM. Chronic sinusitis. JAMA. 2011 Nov 9;306(18):2048–2048.
10. Luo X, Xiang J, Dong X, Cai F, Suo J, Wang Z, et al. Association between obesity and atopic disorders in Chinese adults: an individually matched case-control study. BMC Public Health. 2013;13:12.
11. Labor M, Popović-Grle S, Labor S, Jurić I. Asthma control in obesity-associated asthma phenotype in East Croatia. Med Glas Off Publ Med Assoc Zenica-Doboj Cant Bosnia Herzeg. 2014 Feb;11(1):49–57.
12. Raza MT, Wang D-Y. Is nasal cavity geometry associated with body mass index, height and weight? Indian J Otolaryngol Head Neck Surg Off Publ Assoc Otolaryngol India. 2012 Sep;64(3):266–9.

13. Namysłowski G, Mrówka-Kata K, Scierski W, Wylezoł M, Pardela M. The nasal airway evaluation in morbid obesity. J Physiol Pharmacol Off J Pol Physiol Soc. 2005 Dec; 56 Suppl 6:67–75.
14. Collins M m., Pang Y-T, Loughran S, Wilson J a. Environmental risk factors and gender in nasal polyposis. Clin Otolaryngol Allied Sci. 2002;27(5):314–7.
15. Busaba NY. The impact of a patient's age on the clinical presentation of inflammatory paranasal sinus disease. Am J Otolaryngol. 2013 Oct;34(5):449–53.
16. Larsen K. The clinical relationship of nasal polyps to asthma. Allergy Asthma Proc Off J Reg State Allergy Soc. october 1996;17(5):243–9.
17. Ma R, Di L, Hou L, Zhao D, Yan X. [The correlation study of allergic rhinitis and chronic rhinosinusitis with nasal polyps in Ningxia region]. Lin Chuang Er Bi Yan Hou Tou Jing Wai Ke Za Zhi J Clin Otorhinolaryngol Head Neck Surg. 2012 Nov;26(22):1030–3.
18. Settipane RA, Schwindt C. Chapter 15: Allergic rhinitis. Am J Rhinol Allergy. 2013 Jun;27 Suppl 1:S52–55.
19. Slavin RG. Sinusitis in adults and its relation to allergic rhinitis, asthma, and nasal polyps. J Allergy Clin Immunol. November 1988;82(5 Pt 2):950–6.
20. Settipane RA. Complications of Allergic Rhinitis. Allergy Asthma Proc. 1 July 1999;20(4):209–13.
21. Said SA, McHembe MD, Chalya PL, Rambau P, Gilyoma JM. Allergic rhinitis and its associated co-morbidities at Bugando Medical Centre in Northwestern Tanzania; A prospective review of 190 cases. BMC Ear Nose Throat Disord. 2012;12:13.
22. Newton JR, Ah-See KW. A review of nasal polyposis. Ther Clin Risk Manag. 2008 Apr; 4(2):507–12
23. Kosugi EM, de Camargo-Kosugi CM, Hirai ER, Mendes-Neto JA, Gregorio LC, Guerreiro-da-Silva IDC, et al. Interleukin-6 -174 G/C promoter gene polymorphism in nasal polyposis and asthma. Rhinology. 2013 Mar;51(1):70–6.

Normal saline solution versus chlorhexidine-gluconate solution plus cetrimide solution in neurogenic bladder in periurethral cleansing

ORIGINAL ARTICLE BY

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ABSTRACT

OBJECTIVE

To compare the rate of catheter associated urinary tract infection (CAUTI) between using normal saline solution (NSS) and chlorhexidine gluconate solution plus cetrimide solution for periurethral cleansing in patients with neurogenic bladder.

METHODS

This study is a nested case-control in cohort study in patients with indwelling catheter at Khon Kaen Hospital. The primary outcome was the rate of CAUTI in neurogenic bladder patients of using NSS and chlorhexidine gluconate solution plus cetrimide solution.

RESULTS

A total 436 patients were assessed; 352 patients with NSS and 84 with chlorhexidine gluconate solution plus cetrimide solution for periurethral cleansing. The rate of CAUTI in multivariate analysis between the two groups were similar (hazard ratio (HR), 1.17; 95% confidence interval (CI), 0.90 to 1.51). However, from Cox proportional hazard regression, male sex and peripheral neuropathy were the only two factors that influenced CAUTI (HR, 0.82; 95% CI, 0.67 to 0.99 and HR, 2.01; 95% CI, 1.15 to 3.51, respectively)

CONCLUSION

The rates of CAUTI in patients with neurogenic bladder using the two solution for periurethral cleansing were similar.

INTRODUCTION

Neurogenic bladder is a condition in which the patient does not have a bladder control due to neurological problem of the brain, spinal cord, or peripheral nerve. Catheterization is one of the modality for treatment in this condition.[1] However, the treatment sometimes leads to catheter associated urinary tract infection (CAUTI).[2] Antiseptics have been used to clean the periurethral area before the indwelling catheter insertion even there is not clear evidence for its benefit.[3] The previous study comparing between normal saline solution (NSS) and chlorhexidine in the patients before catheterization showed no significant difference to decrease CAUTI rates.[4,5] However few studies have been carried out specifically in neurogenic bladder patients.[4,5] Therefore the aim of this study is to compare the rate of CAUTI between using NSS and chlorhexidine-gluconate plus cetrimide solution for periurethral cleansing in neurogenic disorder patients.

METHODS

STUDY DESIGN AND PATIENTS

This is a nested case-control in cohort study to compare the rate of CAUTI between using NSS and chlorhexidine gluconate solution plus cetrimide solution for periurethral cleansing in patients with neurogenic bladder by reviewing the database of the patients admitted at Khon Kaen Hospital and Srinagarind Hospital, Thailand from January 2008 to December 2012.

EXPOSURE

The exposures of our interest were the two solution for cleansing of the periurethral area before the indwelling catheter insertion into urethra; normal saline solution (NSS) and 1.5% chlorhexidine gluconate solution plus cetrimide solution.

OUTCOMES

The primary outcome was the rate of CAUTI in those using NSS and chlorhexidine gluconate solution plus cetrimide solution. CAUTI is defined as body temperature>38°C within 48 hours of catheterization, urine culture no more than 2 microorganisms, with elevated peripheral white blood cell count and positive for urine white blood counts. The secondary outcome was to (i) duration of fever, (ii) risen creatinine>2 mg/dL, (iii) sepsis and, (iv) organisms related CAUTI in the patients with neurogenic bladder.

DATA COLLECTION

Data of each patients included in the present study were retrieved from medical records including sex, age, day of catheterization, history of prior antibiotic use, underlying disease (e.g., diabetes mellitus, cerebrovascular accident, vesical calculi, chronic kidney disease), azotemia i.e. serum creatinine>2 mg%, primary diagnosis at admission (e.g., spinal cord injury, brain trauma, skull trauma, multiple sclerosis, sepsis and stroke).

STATISTICAL ANALYSIS

We calculated overall incidence rate (the number of CAUTI divided by the person-years at risk) and 95% confidence interval (CI). Univariate analyses to

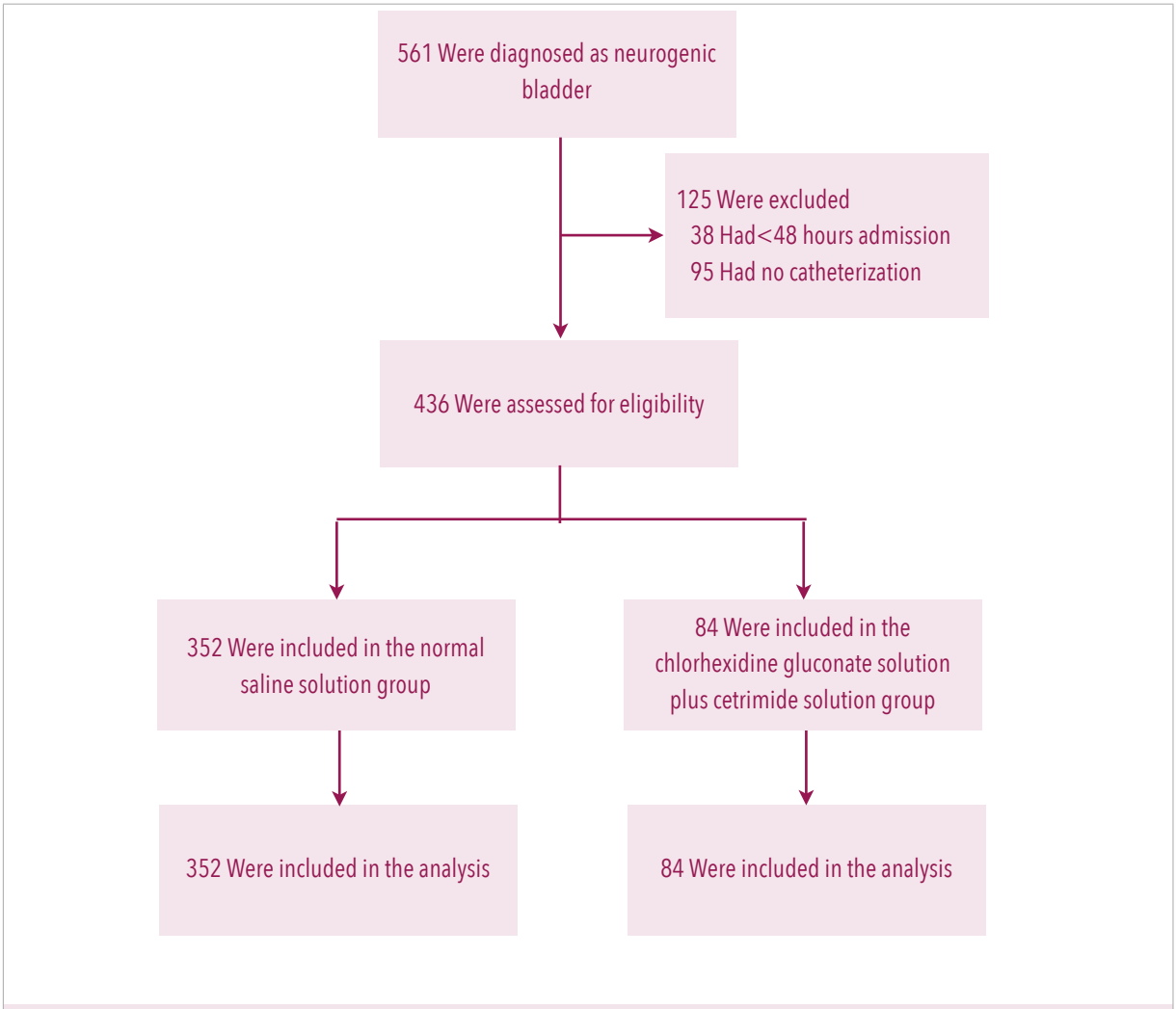

Figure 1. Study Flow Chart

identify risk factors for CAUTI were performed with sex, age, underlying condition (diabetes mellitus, cerebrovascular accident, vesical calculi, chronic kidney disease, immunosuppression), prior antibiotic used, and time of catheterization. Statistical analyses were performed using chi-square tests for comparisons of the categorical variables, student t-tests for comparing the normally distributed scale variables and Mann Whitney U test for comparing the non-normally distributed scale variables. The required significance level was set at $P<0.05$. The outcomes were presented with both relative risk (RR) or hazard ratio (HR) with their 95% CI. The HR of CAUTI were calculated by comparing incidence rate of CAUTI in neurogenic bladder patient who using the two solutions for periurethral cleansing before catheterization.

Table 1. Baseline characteristics of the included patients

Characteristic	Normal saline solution (N=352)	1.5% Chlorhexidine-gluconate plus cetrimide solution (N=84)	P Value
Male sex---no. (%)	218 (61.9)	48 (57.1)	0.42
Age---yr			0.001
Median	53	61	
Interquartile range	32.0-65.8	46-71	
Day of catheterization before onset of infection---days			0.002
Median	2	1	
Interquartile range	0-4	0-3	
Cause of neurogenic bladder---no. (%)			
Spinal cord disease	205 (58.2)	77 (91.7)	<0.001
Brain injury	45 (12.8)	5 (6.0)	0.08
Peripheral nerve injury	14 (4.0)	2 (2.4)	0.75
Peripheral neuropathy	87 (24.7)	0	<0.001
Multiple sclerosis	1 (0.3)	0	1.00
Underlying conditions---no. (%)			
Diabetes mellitus	80 (22.7)	11 (13.1)	0.05
Chronic kidney disease	52 (14.8)	5 (6.0)	0.03
Azotemia	42 (11.9)	7 (8.3)	0.35
Immunosuppression	26 (7.4)	5 (6.0)	0.65
Cerebrovascular accident	12 (3.4)	1 (1.2)	0.48
Vesical calculi	15 (4.3)	0	0.09
Prescribed prophylaxis antibiotics---no. (%)	184 (52.3)	20 (23.8)	<0.001
Cephalosporins	117 (33.2)	7 (8.3)	<0.001
Quinolone	50 (14.2)	7 (8.3)	0.15
Penicillin	12 (3.4)	2 (2.4)	1.00
Aminoglycoside	6 (1.7)	2 (2.4)	0.65
Fosfomycin	1 (0.3)	4 (4.8)	0.006
Ribosome inhibitor	10 (2.8)	0	0.22
Metronidazole	8 (2.3)	0	0.36
Carbapenem	7 (2.0)	0	0.36
Glycopeptide	2 (0.6)	0	1.00

Table 2. Treatment outcomes

Outcomes	Normal saline solution (N=352)	1.5% Chlorhexidine-gluconate plus cetrimide solution (N=84)	Relative risk and 95% CI	P Value
CAUTI---no. (%)	102 (29.0)	50 (59.5)	0.36 (0.25-0.54)	<0.001
Temperature---°C				0.20
Median	37.8	38.0		
Interquartile range	37.2-38.4	37.3-38.5		
Positive urine culture no more than 2 microorganisms---no. (%)	338 (96.0)	81 (96.4)	0.91 (0.32-2.60)	0.80
Peripheral white blood cell count, cells/uL				0.08
Median	9800	9000		
Interquartile range	7450-13700	6800-12200	0.90 (0.45-1.80)	
Urine white blood count, cell/hpf				0.03
Median	20	10		
Interquartile range	3-100	3-40		
Duration of fever---days				0.02
Median	1	1.5		
Interquartile range	0-3	0-4		
Creatinine rising >2 mg/dL---no. (%)	58 (16.5)	4 (4.8)	3.32 (1.26-8.73)	0.01
Sepsis---no. (%)	26 (7.4)	7 (8.3)	0.90 (0.45-1.80)	0.75

RESULTS

PATIENT CHARACTERISTICS

Initially, medical record of 561 patients were preliminary reviewed (Figure 1). However, only 436 were left in the analysis. Of these, most of them were male (61%) with the median age of 59 years old (Table 1). Spinal cord injury was the most common cause for their neurogenic bladder condition (64.7%). Diabetes was prevalence in about 21% of this group of patients. Their median time of being on catheterization was 1 day. Most of them received prophylaxis antibiotics (46.8%) and cephalosporin was the most prescribed drugs.

Comparing between these two dressing solutions, the patients in the NSS group tended to be younger (P=0.001) with longer on the catheter (P=0.002), less proportion of patient from the cause of spinal cord diseases (P<0.001), higher proportion patients with peripheral neuropathy (P<0.001), higher proportion of patient with chronic kidney disease (P=0.03) and higher

Table 3. Organism of CAUTI pathogens

Organism	Normal saline solution (N=352)	1.5% Chlorhexidine-gluconate plus cetrimide solution (N=84)
Escherichia coli.---no. (%) (4)	47 (13.4)	22 (26.2)
Pseudomonas aeruginosa.---no. (%)	14 (4.0)	6 (7.1)
Enterococcus faecalis.---no. (%)	12 (3.4)	3 (3.6)
Klebsiella spp.---no. (%)	8 (2.3)	7 (8.3)
Enterobacter cloacae.---no. (%)	5 (1.4)	7 (8.3)
Proteus mirabilis.---no. (%)	3 (0.9)	4 (4.8)
Proteus vulgaris.---no. (%)	3 (0.9)	1 (1.2)
Acinetobacter baumannii.---no. (%)	1 (0.3)	3 (3.6)
Candida albicans.---no. (%)	12 (3.4)	0
Morganella morganii.---no. (%)	0	4 (4.8)
Serratia marcescens.---no. (%)	0	3 (3.6)
Stenotrophomonas maltophilia.---no. (%)	0	2 (2.4)
Corynebacterium spp.---no. (%)	0	2 (2.4)
Citrobacter diversus.---no. (%)	0	1 (1.2)
Citrobacter freundii.---no. (%)	0	1 (1.2)
Gardnerella vaginalis.---no. (%)	0	1 (1.2)

proportion of patients received prophylaxis antibiotics (P<0.001) compared to those in the chlorhexidine gluconate solution plus cetrimide solution group (Table 1).

TREATMENT OUTCOMES

Patients in the NSS group tended to have lower rate of CAUTI (RR, 0.36; 95%l CI, 0.25 to 0.54), higher proportion of patients with risen creatinine>2 mg/dL (RR, 3.32; 95% CI, 1.26 to 8.73) (Table 2). However, there were no differences regarding proportion of patients with sepsis and positive urine culture no more than 2 microorganism between the two groups. In term of causative pathogens the most common organisms found in the present study were *Escherichia coli*, *Pseudomonas aeruginosa* and *Enterococcus faecalis* (Table 3).

From the Kaplan-Meier analysis, the group that dressed with NSS and those received prophylaxis antibiotics had higher rate of CAUTI (P=0.001 and P=0.015 by log-rank test, respectively) (Figure 2). However, from Cox proportional hazard regression, male sex and peripheral neuropathy were the only two factors that influenced CAUTI (HR, 0.82; 95% CI, 0.67 to 0.99 and HR, 2.01; 95% CI, 1.15 to 3.51, respectively)

Table 4. Factors predicting CAUTI from Cox proportaional hazard regression

Factor	Adjusted hazards ratio (95% confidence interval)
Age	1.00 (0.99-1.00)
Male sex	0.82 (0.67-0.99)
Diabetes Mellitus	0.82 (0.63-1.06)
Chronic kidney disease	0.87 (0.63-1.19)
Azotemia	0.92 (0.66-1.29)
Peripheral neuropathy	2.01 (1.15-3.51)
Spinal cord injury	1.44 (0.86-2.40)
Brain injury	1.58 (0.88-2.81)
Patient with systemic antibiotic	1.01 (0.82-1.23)
Normal saline used	1.17 (0.90-1.51)

DISCUSSION

MAJOR FINDINGS

The result of this study show that the rate of CAUTI for using NSS no different significant to that chlorhexidine gluconate solution plus cetrimide solution for periurethral cleansing before catheterize.The characteristic of patient that prone to occur CAUTI is late-middle aged person, history of spinal cord injury and peripheral neuropathy that cause neurogenic bladder, underlying disease is chronic kidney disease. The onset of CAUTI occurred approximately 2 day in NSS group and 1 days in chlorhexidine gluconate solution plus cetrimide solution group after catheterization.

STRENGTH AND LIMITATION FO THE STUDY

Our analysis had several strength. Firstly we were able to compare neurogenic bladder patient between using NSS and chlorhexidine gluconate solution plus cetrimide solution for periurethral

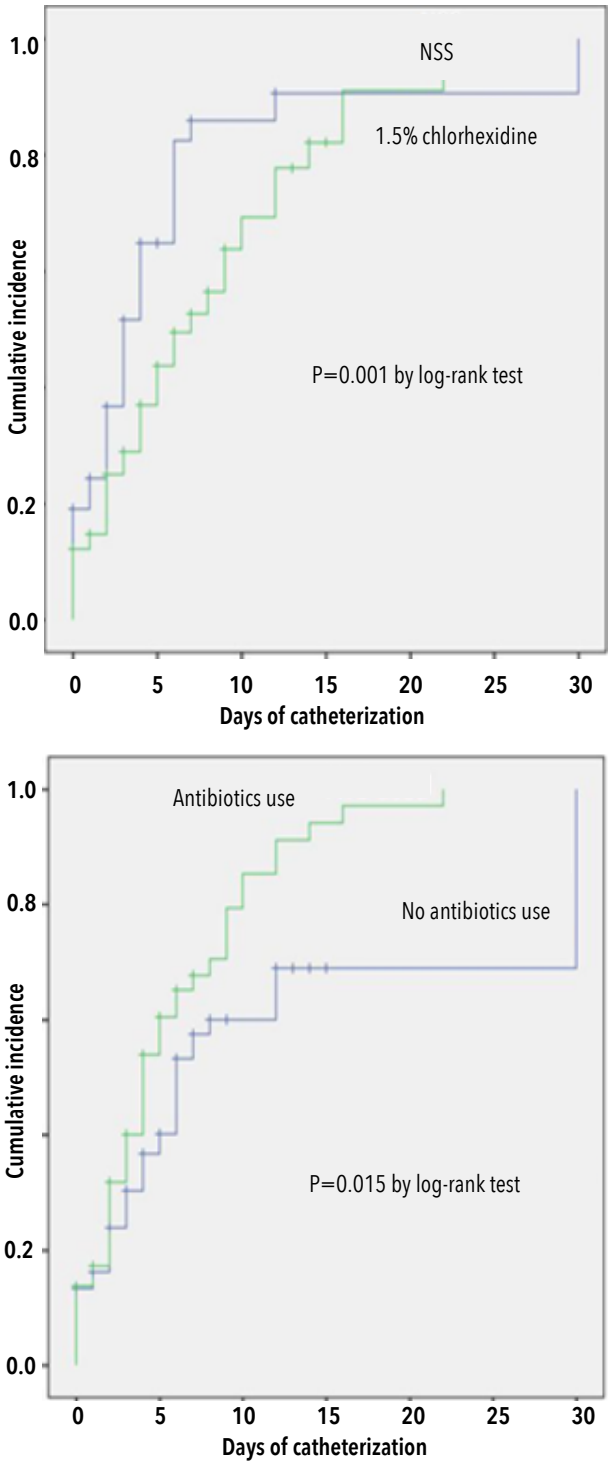

Figure 2. Kaplan-Meier survival estimates regarding the two solution

cleansing which no evidence base in neurogenic bladder patient. This study have adequate sample size form calculated type I error rate of 5%, a power of 80%, that we need to have 168 patients in two groups. The detailed information lead us to account for the roles of several possible confounders in the analysis, such as sex, age, cause of neurogenic bladder, underlying conditions, and prescribed prophylaxis antibiotics.Main possible limitation of the study is the data were analyzed from neurogenic bladder patients in only Khon Kaen, Thailand. So the results can't representative to the population in other area and another patients.

COMPARISON WITH OTHER STUDIES

Recently, a randomized control randomized controlled trial summarised the practice of periurethral cleaning with an antiseptic which involved obstetric patients, it suggested that the antiseptics was not effective as they did not decrease the rates of bacteriuria in this study sample.[6] The results of our study support the finding of Joan Webster et al. and suggest that using NSS or chlorhexidine gluconate solution plus cetrimide solution for periurethral cleansing before catheterize have similar the rate of CAUTI that specific in neurogenic bladder patients.

CONCLUSION AND IMPLICATION

In summary, this study show the rate of CAUTI no significant difference between using NSS compare with chlorhexidine gluconate solution plus cetrimide solution for periurethral cleansing before catheterize. So this finding has important implications for cost-effective in hospital. Using of NSS, which more inexpensive than chlorhexidine gluconate solution plus cetrimide solution for periurethral cleansing can reduce the costs down, while performance of the sterilization was not different.

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REFERENCES

1.Siroky MB. Pathogenesis of bacteriuria and infection in the spinal cord injured patient. The American journal of medicine. 2002;113(1A):67S–79S.
2.Warren JW. Catheter-associated urinary tract infections. Infectious disease clinics of North America. 1997;11(3):609–22.
3.Huth TS, Burke JP, Larsen RA, Classen DC,Stevens LE. Randomized trial of meatal care with silver sulfadiazine cream for the prevention of catheter-associated bacteriuria. J Infect Dis. 1992;165(1):14-18.
4. Theofanidis D, Fountouki A. Bladder catheterization in Greek nursing education: An audit of the skills taught. Nurse Education Today. 2011;31(2):157–62.
5. Pellowe C. Reducing the risk of infection with indwelling urethral catheters. Nursing Times. 2009;105(36):29–30.
6. Webster J, Hood RH, Burridge CA, Doidge ML, Phillips KM, George N. Water or antiseptic for periurethral cleaning before urinary catheterization: a randomized controlled trial. American Journal of Infection Control. 2001;29(6):389–94.

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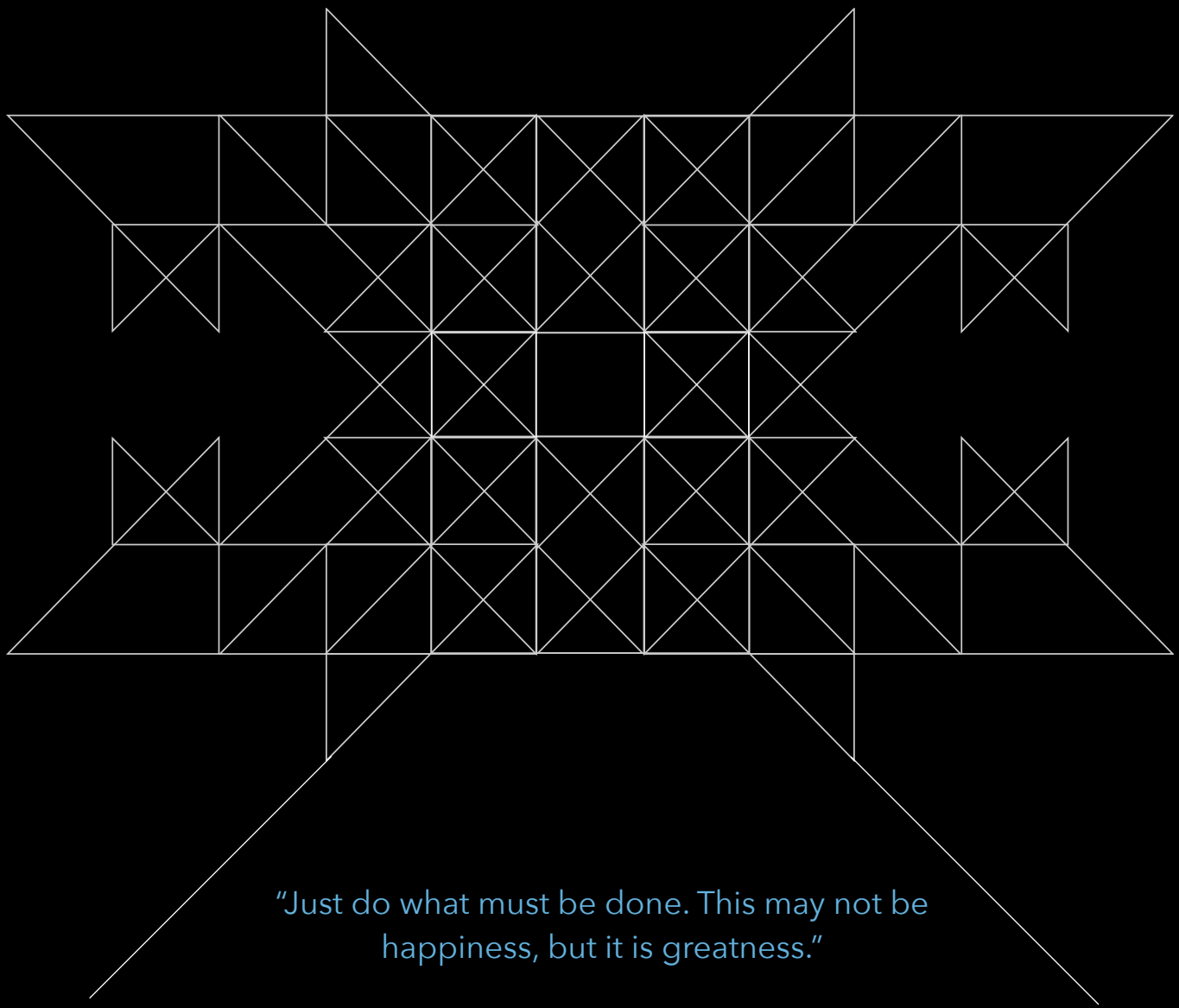

"Just do what must be done. This may not be happiness, but it is greatness."

-George Bernard Shaw


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