THE DEGREE OF OBESITY THAT CONTRIBUTE TO THE FAILURE EPIDURAL ANAESTHESIA FOR PARTURIENT MOTHERS UNDERGOING LOWER SEGMENT CAESARIAN SECTION

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ABSTRACT

THE DEGREE OF OBESITY THAT CONTRIBUTE TO THE FAILURE EPIDURAL ANAESTHESIA IN PARTURIENT MOTHERS UNDERGOING LOWER SEGMENT CAESARIAN SECTION

The degree of obesity that contributing to failure epidural anaesthesia was the main focused in this study. The target samples were parturient mothers undergoing lower segment caesarian section either for an emergency or elective. Parturient mothers chosen as samples were analysed for anthropometry. Sampling of the study was done through universal convenience method whereby parturient mother planed for epidural anaesthesia or epidural anaesthesia converted to general anaesthesia included into this study. Samples were categorized into two groups non obese and obese. Samples strength were based on the Survey System with confidence level at 95.0% and confidence interval at 5.0%. The researcher observed the epidural anaesthesia procedure carried out by anaesthetist for the purpose of obtaining data in operating theatre. Research forms used in this data collection were divided into five sections. The first section (section A) was about the demographic background of parturient mothers. The second section (Section B) focused on the procedure and technique while the third section (Section C) involved with drugs used for epidural anaesthesia procedure. The fourth section (Section D) was pertaining to problems during attempt in epidural anesthesia procedure. The last section (Section E) was on sensory blocked level measured using pin-prick test and motor block evaluation based on Bromage Scale. Samples of parturient mothers planned for Lower Segment Caesarian Section either successful or failed epidural anaesthesia included in this study were considered as inclusion criteria. Samples of parturient mothers planned for Lower Segment Caesarian Section but ended with vaginal delivery were considered as exclusion criteria. Hypothesis of the study, there was a significant different in the occurrence of failure epidural anaesthesia between the degree of body mass index BMI group for parturient mothers undergoing lower segment caesarian section LSCS.

Based on descriptive analysis, Generally, respondents profiles related to demographic and ethnographic were considered not factors for the failure of epidural anaesthesia except age became the positive association based on Chi Square P = 0.02 .The Visual Analogue Pain Score VAPS 1 (84.8% within non obese group). The percentage of pain rating scale VAPS 1 slightly higher in obese group (85.0% within obese group). With this aspect, some differences in pain rating scale VAPS 1 when P < 0.05 (P = 0.00) from Pearson Chi Square. The incident of general anesthesia conversion was much higher when parturient mothers experienced 0.0 – 33.0% the degree of block (Bromage Scale) for both right and left lower limbs. It was also been observed that between 66.0 % – 100 % degree of block (Bromage Scale) still got chance to be converted into general anesthesia.

Epidural anesthesia was used successfully for LSCS surgery in all 33 cases of non obese parturient mothers and 114 of 120 obese parturient mothers. Mean Bromage score based on four criteria degree of right lower limb for obese group (1.94 ± 0.124) much higher than non obese group (1.85 ± 0.222). Similarly mean Bromage score based on four criteria degree of left limb for obese group (2.00 ± 0.124) much higher than non obese group (1.85 ± 0.222). Overall, there was no significant different in term of anaesthesia failure rate among the category of BMI as well as between non obese and obese parturient mothers undergoing the Lower Segment Caesarian Section LSCS surgery as tested with Chi Square two tailed with $P = 0.38$ ($P > 0.05$). Hence, epidural anaesthesia is still good perspective for obese parturient mothers even though pre obese category of Body Mass Index proven of epidural anaesthesia failure. The overall failure rate of epidural anaesthesia in this research was 3.9% and in looking to this, epidural anaesthesia became a good prospective to be practiced for non obese and obese parturient mothers undergoing LSCS.

ABSTRAK

Tahap obesiti yang menyumbang kepada kegagalan epidural anestesia adalah fokus utama dalam kajian ini. Sampel sasaran adalah ibu yg melahirkan menjalanii Lower Segmen Caesarian Section LSCS sama ada untuk kecemasan atau elektif. Ibu-ibu yg melahirkan dipilih sebagai sampel telah dianalisis untuk antropometri. Sampel kajian yang telah dilakukan melalui kaedah persampelan universal mana ibu yg melahirkan dirancang untuk epidural atau bius epidural anestesia ditukar kepada bius dimasukkan ke dalam kajian ini. Sampel telah dikategorikan kepada dua kumpulan bukan gemuk dan obes. Kekuatan sampel berdasarkan Sistem Survey dengan tahap keyakinan pada 95.0% dan selang keyakinan pada 5.0%. Penyelidik memerhatikan prosedur anestesia epidural dijalankan oleh pakar bius untuk tujuan mendapatkan data dalam dewan pembedahan. Bentuk format instrumen yang digunakan dalam pengumpulan data ini telah dibahagikan kepada lima bahagian. Bahagian pertama (bahagian A) adalah latar belakang demografi ibu-ibu yg melahirkan. Bahagian kedua (Seksyen B) memberi tumpuan kepada prosedur dan teknik manakala bahagian ketiga (Bahagian C) yang terlibat dengan ubatan yang digunakan untuk prosedur epidural anestesia. Bahagian keempat (Bahagian D) telah yang berkaitan dengan masalah semasa percubaan dalam prosedur bius epidural. Bahagian terakhir (Bahagian E) adalah pada tahap halanagn deria diukur menggunakan ujian pin-cucuk dan penilaian blok motor berdasarkan Skala Bromage. Sampel ibu-ibu yang melahirkan dirancang untuk LSCS sama ada berjaya atau gagal epidural bius dimasukkan ke dalam kajian ini dianggap sebagai kriteria kemasukan. Sampel ibu-ibu yang melahirkan dirancang untuk LSCS tetapi berakhir dengan kelahiran menerusi farahj (vaginal delivery) dianggap sebagai dikecualikan dari kriteria. Hipotesis kajian, bahawa terdapat perbezaan yang ketara dalam kinsiden kegagalan anestesia epidural antara tahap kumpulan indeks jisim badan BMI bagi ibu-ibu yg melahirkan menjalani LSCS.. Berdasarkan analisis deskriptif, Secara umumnya, responden profil yang berkaitan dengan demografi dan etnografi dianggap bukan faktor untuk kegagalan epidural anestesia kecuali umur menjadi persatuan yang positif berdasarkan Chi Square P = 0.02. Analog Skor Visual Sakit VAPS 1 (84.8% dalam kumpulan bukan gemuk). Peratusan sakit skala penarafan VAPS 1 lebih tinggi sedikit dalam kumpulan obes (85.0% dalam kumpulan obes). Dengan aspek ini, beberapa perbezaan dalam kesakitan skala penarafan VAPS apabila P <0.05 (P = 0.00) dari Pearson Chi Square. Insiden penukaran anestesia am adalah lebih tinggi apabila ibu-ibu yg melahirkan mengalami tahap blok 0,0-33,0% (Skala Bromage) untuk kedua-dua kiri dan kanan anggota badan yang lebih rendah. Ia juga diperhatikan bahawa di antara 66.0% - 100% tahap blok (Bromage Skala) masih mendapat peluang untuk ditukar kepada anestesia am. Bius epidural telah digunakan dengan jayanya untuk pembedahan LSCS dalam semua 33 kes bukan ibu yg melahirkan gemuk dan 114 daripada 120 gemuk ibu yg melahirkan. Skor min Bromage berdasarkan empat kriteria tahap anggota badan hak yang lebih rendah bagi kumpulan gemuk (1.94 ± 0.124) lebih

tinggi daripada kumpulan bukan gemuk (1.85 ± 0,222). Begitu juga skor skala Bromage berdasarkan empat kriteria tahap anggota kiri untuk kumpulan obes (2.00 ± 0.124) lebih tinggi daripada kumpulan bukan obes (1.85 ± 0,222). Secara keseluruhannya, tidak ada perbezaan yang signifikan dari segi kadar kegagalan anestesia di kalangan kategori BMI serta antara obes dan bukan obes pada ibu ibu yg melahirkan menjalani pembedahan LSCS sebagaimana yang diuji dengan Chi Square dua ekor dengan P = 0.38 (P> 0.05). Oleh itu, epidural bius mempunyai perspektif baik untuk ibu-ibu yang melahirkan anak walaupun kategori pra obese Indeks Jisim Badan terbukti daripada epidural kegagalan anestesia. Kadar kegagalan keseluruhan epidural anestesia dalam penyelidikan ini adalah 3.9% dan dalam penyelidikani ini, serta epidural anestesia menjadi prospektif yang baik untuk diamalkan untuk ibu-ibu bukan obese serta obes yang menjalani kelahiran menerusi LSCS.

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P	Probability
>	Greater than
<	Less than
≈	Almost equal to
α	Alpha
±	Plus minus sign
N	Total ample (from SPSS calculation)
n	Total sample (written in word processing)
=	Equal to
m^2	Meter square

LIST OF ABBREVIATION

ACOG	The American College of Obstetricians and Gynecologists
ANOVA	Analysis Of Variance
ASA	American Society Of Anaesthesiologist
BMI	Body Mass Index
CMG	The Current Medical Group
CSEGA	Combined Spinal Epidural And General Anaesthesia
CSF	Cerebro Spinal Fluid
DS - ES	Distance Of Skin To Epidural Space
ECG	Electrocardiogram
IOTF	International Obesity Task Force
L 2 - L 3	Lumbar Two – Lumbar Three
LSCS	Lower Segment Caesarean Section
OT	Operating Theatre
Sig	Significant
SD	Standard Deviation
T 6 – T 7	Thoracix Six – Thoracix Seven Level
VAPS	Visual Analogue Pain Score
WFSA	THE World Federation of Societies of Anaesthesiologists

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Socioeconomic advancements in Malaysia for the past two decades had brought about significant changes in the lifestyles of communities. These included significant changes in the dietary patterns of Malaysians women, including food habits, food purchasing and consumption patterns. The trends in food availability in the country, the nutritional status of communities made some of the Malaysia women became obese. The combined prevalence of overweight and obesity ranged from 26% to 53% with an overall mean of 39% as stated by Institute of Medical Research IMR (1999). Comparatively in terms of prevalence and epidemiology, there was a slow but steady increase in obesity in United Kingdom UK. In UK, in 1980 - 6% males and 8% females were obese (Adams and Murphy, 2000). In 1987 - 8% males and 12% females were regarded obese in United Kingdom UK (Adams and Murphy, 2000). However, from this perspective prevalence of obesity varies with socioeconomic status. In developing countries poverty was associated with greater prevalence, and thus put on more highlights than the obesity issues. Obesity is a complex issue by itself, and as Malaysia is developing the country will continue to tackle this issue as it progress into the year 2020 and beyond.

The changes in dietary patterns of Malaysians towards an "affluent" diet of the developed industrialized countries had been a cause for concern with the obesity among Malaysian women. Anthropometry analysis of body mass index BMI was the single most practical, easily applied, inexpensive and non-invasive method of assessing body composition. The BMI index reflects both health and nutrition and predicts performance, health and survival. The use of body mass index (BMI) as a measure of obesity was being practice by World Health Organization WHO. The World Health Organization's WHO's definitions for overweight 25 - 29.9 kg/m^2, obesity30 - 39.9 kg/m^2 and morbid obesity > 40 $kg/m^{2.}$. Obesity claimed to be the contribution factor to the incidence of epidural anaesthesia failure and also

associated with increased body mass index (BMI). In this particular issue, Dresner (2006) analyzed data on 13,299 women who received an epidural for cesarean section between 1997 and 2005. The women were divided into groups according to their body mass index (BMI), based on World Health Organization categories. From his study it was found that 0.0% parturient mothers considered underweight , 22.8% were classified as being of normal body mass, 41.9% as being overweight, 31.9% as obese, and 3.4% as morbidly obese. According to Dresner (2006), the frequency of midwives' assessment of epidural analgesia as unsatisfactory and failed, increased with subjects' weight, with unsatisfactory rates of 5.1%, 5.7%, 7.7%, and 11.7% among normal weight, overweight, obese, and morbidly obese subjects, respectively. In other word, Dresner (2006) found that epidurals were more likely to fail as body mass index BMI increased.

Epidural anaesthesia was commonly used in developed countries for analgesia during labour and could therefore easily been used to produce anaesthesia for caesarean sections with larger doses of local anaesthetic if indicated. However, epidurals werre technically more difficult to perform than spinal anaesthesia and required more specialised equipment, which was often not available in some of country of the developing world. There were significant and potentially fatal complications and they require experienced anaesthetists and midwives for their safe use. The main advantage of epidurals was that they were suitable for prolonged use e.g., as pain relief in labour and for post Caesarean Section anaesthesia and analgesia. Epidural anaesthesia might be a choice in patients with poor condition, since surgical analgesia if ever needed, could be established slowly with small repeated doses of local anaesthetic, thereby minimising cardiovascular instability. However, since expertise to perform epidurals was often not easily available, they were not always a practical technique for routine anaesthesia for Caesarean section. Anaesthesia took longer time to develop compared with subarachnoid block and was induced by using increments of either 2% lignocaine with 1:200,000 adrenaline or 0.5% bupivacaine. Note that 0.75% bupivacaine was not recommended for anaesthesia for LSCS.

Epidural anaesthesia was considered a complex procedure which involves injection of local anaesthetic drugs through a catheter into the epidural space of the spine, blocking the transmission of pain signals through nerves in the spinal cord. This was causing a temporary loss of pain and sensation below the point of injection. Typically, a 4-inch long needle was inserted about 2.5 inches deep as explained by Dresner et al (2006) to Reuters Health. "But in very obese women, you could insert the needle up to the hilt, and you still haven't gotten to where you're going yet." Dresner et al (2006). Dresner et al (2006) reported in the British Journal Of Gynaecology that nearly 42 percent of patients were overweight, 32 percent were obese, and 3.4 percent were morbidly obese who presented with obstetric problem at Leeds General Infirmary between 1997 and 2005.

The onset of epidural block with all local anesthetics could usually be detected after 5 minutes in the dermatomes immediately surrounding the injection site. The time to peak effect was differed somewhat among local anesthetics. Shorter-acting drugs usually reach their maximum spread in 15-20 minutes, whereas longer acting drugs required 20-25 minutes. Increasing the dose of local anesthetic speeds the onset of both motor and sensory block. Unblocked segments or missed segments usually known as patchy block were usually one sided could occur which affect satisfactory field of epidural anesthesia. This occurred more often in obstetrical patients than in the general surgical population (Mcintosh, 1995). The occurrence of residual pain in one area means failure of the total block, since the pain in this area was just as agonizing as if no anesthesia existed in the neighbouring segments.

1.2 Problem Statement

Epidural anaesthesia in the morbidly obese could be complicated by a number of factors. First is psychological 'make-up' of the morbidly obese. The popular image of the plump, jovial women often felt guilty about their physical condition and body configuration, depressed about anticipated problems with childbirth and infant rearing and, sometimes, hostile and defensive to an anaesthetist encountering genuine technical difficulty. Besides that, inability to position the patient on a