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ORIGINAL RESEARCH

TO EVALUATE THE INCIDENCE OF SPINAL ANESTHESIA FAILURE NECESSITATING CONVERSION TO GENERAL ANESTHESIA IN WOMEN PRESENTING FOR CAESAREAN SECTION

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ABSTRACT

Aim: To evaluate the incidence of spinal anesthesia failure necessitating conversion to general anesthesia in women presenting for caesarean section.

Methods: This research included 120 women who were scheduled for a caesarean section under regional anaesthetic, as well as women who were weighed and had their heights measured. Women scheduled for general anaesthesia, women who refused to participate, and women whose height and weight could not be obtained were all excluded from the research.

Results: We discovered that the majority of the patients (70.33%) were between the ages of 25 and 35, with the average age of the patients being 32.552.58 years. The patients' mean BMI was 29.122.33kg/m2. There were 21 elective cases (17.5%) and 99 emergency cases (82.5%). The frequency of spinal anaesthesia failure necessitating conversion to general anaesthesia. We discovered that 10% of all patients were converted to general anaesthetic owing to spinal anaesthesia failure. The outcome was statistically significant ($p<0.05$).

Conclusion: As a result of the failure of spinal anaesthetic during the c-section operation, we found that 10% of the patients in our research group required a change to general anaesthetic.

Keywords: Spinal anesthesia, C-section, General anesthesia.

INTRODUCTION

Spinal anaesthesia is increasingly being used to facilitate the rising prevalence of caesarean sections across the world. One study found a 6.3% worldwide increase in caesarean sections between 2001 and 2009, with spinal anaesthesia being the most common method of anaesthesia at district and regional hospitals.[1,2] Spinal anaesthesia is the anaesthetic of choice for patients undergoing caesarean section because it is safe, has a rapid onset of effects, and effectively controls postoperative pain.[3] It's also safer for moms than general anaesthesia.[4] However, problems with insufficient or failed spinal anaesthesia may appear out of nowhere. Many different things might be meant by the term "failed spinal anaesthesia," but two main categories have been defined in various studies. To begin, we characterised partial failure as the need for additional intravenous or inhaled analgesics due to pain or discomfort encountered during surgery.[5-7] Additionally, failing to generate enough sensory blocking, leading to the need for general anaesthesia, was defined as an utter failure.[5-7] In prior studies, researchers discovered that the percentage of full spinal anaesthetic failure requiring conversion to general anaesthesia with an endotracheal tube in caesarean delivery varied between 0.5 and 6.4%. Anesthesiologists and other medical staff in the operation room dislike it when patients are converted. Anesthesia-related lawsuit in obstetric practise is uncommon in low-resource nations like ours, although intra-operative discomfort during spinal anaesthesia for Caesarean section has been recognised as a prevalent cause of litigation.[8] Spinal anaesthesia has the potential to make mothers feel uneasy, which might have a chilling influence on their future anaesthetic preferences and slow the development of best practises in obstetric anaesthesia here on Earth. Research has shown that this method has less dangers than general anaesthesia. One potential drawback of spinal anaesthesia is the possibility of a failed spinal block. Partial or insufficient spinal block requiring further analgesia or switching to general anaesthesia is the hallmark of failed spinal anaesthesia (FSA).[9]

METHODS AND MATERIALS

The research was carried out at the Department of Anesthesia. The ethical approval for the research was received from the institute's ethical board prior to the start of the investigation. The patients for the research were chosen by enrolling all moms scheduled for caesarean section under regional anaesthetic in the obstetric theatre. This research included 120 women who were scheduled for a caesarean section under regional anaesthetic, as well as women who were weighed and had their heights measured. Women scheduled for general anaesthesia, women who refused to participate, and women whose height and weight could not be obtained were all excluded from the research.

METHODOLOGY

Eligible patients or their legal guardians, if they were unable to provide their approval, filed a permission form and signed an informed consent document before they could take part in the experiment. In all, 120 participants were included in the study. A questionnaire was used to collect the data; it was filled out in part on the ward and in part in the operating room as the process proceeded. Age, weight, height, the cause for the caesarean section, and the patient's

parity were entered. We saw spinal anaesthesia being given in OT, taking note of the anesthesiologists' team, their posture, the anaesthetic medicines they employed, and the depth of the block. If there was a conversion, details including the time it took, the kind of conversion, and any challenges that arose throughout the process were recorded.

The data was statistically analysed using SPSS version 20.0 for Windows. The significance of the data was determined using the Student's t-test and the Chi-square test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1 displays the demographic information for the patients. We discovered that the majority of the patients (70.33%) were between the ages of 25 and 35, with the average age of the patients being 32.552.58 years. The patients' mean BMI was 29.122.33kg/m2. There were 21 elective cases (17.5%) and 99 emergency cases (82.5%). The frequency of spinal anaesthesia failure necessitating conversion to general anaesthesia is seen in Table 2. We discovered that 10% of all patients were converted to general anaesthetic owing to spinal anaesthesia failure. The outcome was statistically significant ($p<0.05$).

Table 1: Demographic data of the patients

Age in years	Number of patients	Percentage
18-25 years	35	29.17
25-35years	70	58.33
Above years	15	12.5
Mean age	32.55±2.58	
Mean BMI (kg/m^2)	29.12±2.33	
Type of cesarean section		
Elective	21	17.5
Emergency	99	82.5

Table 2: Incidence of Failure of Spinal Anesthesia Necessitating the Conversion to General Anesthesia

	No. of cases n, %	P-value
Total cases	120	0.001
Converted cases	12 (10%)	
Non-converted cases	110 (90%)	

DISCUSSION

At our institution, 10% of spinal anaesthetic failures resulted in the need for general anaesthetic for a caesarean section. Many different definitions of "failure" have been utilised, and this has resulted in widely varying reports of the frequency with which spinal anaesthetic has failed in the past. Our research focused on cases of complete spinal anaesthetic failure, which we defined as necessitating general anaesthesia. Based on this criterion, our incidence is similar to that reported for obstetric patients in Singapore (4% of 800)[10], France (4% of 270)[11], and Nigeria (6% of 389). [12] There is currently no set maximum acceptable rate for the

progression from spinal to general anaesthetic during caesarean birth in Thailand. However, we have an incidence rate that is in line with the standards set by the Royal College of Anaesthetists in the United Kingdom. [13] In the United Kingdom, the desired rates for emergency caesarean sections vary. Categories 1–3 (maternal or foetal compromise, or no maternal or foetal compromise but early delivery is necessary) have probabilities of 5% or less, whereas category 4 has a probability of 1% or less (delivery at a time that suits the woman and maternity services). [13] Partial caesarean delivery failure patients were excluded from the present study. This is because additional analgesia or sedation, rather than total anaesthesia, is all that is needed to treat partial failure. Because of this, neither the frequency of partial failure nor the variables related to it were determined in this research.

According to our findings, patients with a mean body mass index of 29.12±2.33 kg/ m2 were more likely to have complete spinal anaesthetic failure. Patients in the failed spinal anaesthetic group of obstetric patients reported by Rukewe et al. to be lighter and have lower body mass indexes. These researchers, however, did not discover that being overweight or obese was linked in any way to a higher likelihood of a failure spinal anaesthetic. [14]Sng et al.[10] also found that patients of greater stature had a higher incidence of partial failure compared to individuals of lower stature. Inadequate spinal block height (block-level lower than T6) was shown to occur immediately after spinal anaesthesia in mothers with a body mass index (BMI) of 23 kg/m2 by Miyoshi and colleagues.[15] However, they did not identify any variations in the degree to which supplemental analgesics or anaesthetics were necessary within the scope of their investigation.[15] Although the average body mass index (BMI) leading to insufficient block in the work of Miyoshi and colleagues (23.4 kg/m2) in Japan was lower than that reported by our research (28.4 kg/m2), the current examination demonstrated that a lower BMI was related with unsuccessful spinal block. This indicates that the depth of spinal anaesthesia is affected by the patient's physical make-up, including their size (height and weight). One proposed explanation is that the pressures inside the abdomen and the epidural area cause changes in the amount of cerebrospinal fluid. It is possible that the epidural space pressure and, thus, the extent of the blockage, would be reduced in individuals with a lower body mass index (BMI) owing to a lower body weight or a greater height. In addition, the greater amount of lumbosacral cerebrospinal fluid may account for the negative association between the length of the vertebral column and the cephalad spread of spinal anaesthesia described in prior studies.[16] Researchers also discovered a negative correlation between BMI and lumbosacral cerebrospinal fluid volume. [17]

When 0.5% hyperbaric bupivacaine was administered intrathecally again after a failed spinal, Bhar D et al[18] examined the results of two different dosages. One hundred pregnant women from the American Society of Anesthesiologists' levels I and II, who were scheduled for elective LSCS and had a Bromage score of 0 and no sensory block even at the L4 dermatome after 10 minutes of first spinal anaesthesia; were included in this prospective, randomised, single-blind study. Repetitive spinal anaesthesia was administered with 2.4 ml of 0.5% hyperbaric bupivacaine to patients in Group A, and 2 ml to those in Group B. Intra- and postoperatively, patients were observed to record problems and measure vitals such as heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), oxygen saturation (SpO2), respiratory rate (RR), and electrocardiogram (ECG). When comparing Groups A and B, Group A had a much greater incidence of high spinal, bradycardia, hypotension,

respiratory problems, and nausea and vomiting. In the first 10 minutes, patients in Group A had considerably lower SBP, DBP, and HR than those in Group B. With a sensory block below L4 and motor power on the Bromage scale at 0, they determined that a second spinal anaesthetic may be safely administered during the caesarean delivery.

CONCLUSION

As a result of the failure of spinal anaesthetic during the c-section operation, we found that 10% of the patients in our research group required a change to general anaesthetic.

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