

Prevalence of Back Pain and Headache after Spinal Anesthesia for Cesarean Section Compared to General Anesthesia

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ABSTRACT

Background: Cesarean section is the most frequent surgery in obstetrics. Common types of anesthesia done in CS are regional and general, which aim to ensure the well-being of the fetus and the mother and alleviate the pain in surgery as much as possible. In our study, we aim to investigate the prevalence of headaches and back pain after regional anesthesia compared to general anesthesia.

Materials and methods: A cross-sectional study involving 279 patients who were admitted to Alzahrawi hospital and had undergone CS.

Results: The sample in our study consisted of 279 patients, whose average age was 30.07 years; the majority of these patients had undergone regional anesthesia (82%); the remaining patients had undergone general anesthesia (18%). We did not find a statistically significant relationship between patients' headaches and back pain and the type of anesthesia ($P > 0.05$); however, there was a statistically significant relationship between the procedures used during the procedure and the type of anesthesia.

Conclusion: Our study has shown that there's no link between the anesthetic procedure and the occurrence of back pain and headaches, even though most of the participants have gotten regional anesthesia.

Keywords: Macintosh laryngoscope; AirTraQ video laryngoscope; General anaesthesia; Duration of intubation; Haemodynamic parameters

INTRODUCTION

Cesarean Section (CS) is one of the most common surgeries worldwide and is the most common surgery in obstetrics. Common procedures of anesthesia for CS are spinal and general anesthesia, which aims to alleviate the pain and discomfort in surgery as much as possible and reduce postoperative adverse reactions [1]. Postural headache and Postural Back Pain [PDBP] are two common complications seen in spinal anesthesia following a cesarean section [2]. Although headaches don't usually occur after general surgery, they are not uncommon but are seen more in spinal surgery [3]. Backache is a common complication in general surgery and is seen more frequently than headaches [4]. Spinal headaches are caused by leakage of cerebrospinal fluid through a puncture hole in the member that surrounds the spinal cord and typically appears within 2 to 3

days after anesthesia, while backache is usually secondary to localized inflammation, often associated with a degree of muscle spasm and lasts for a few days or a week [5,6]. Treatment for headaches is usually conservative that includes caffeine supplementation, bed rest, and analgesics treatment [7]. Mild cases of back pain are also treated with conservative treatment, and as for moderate and severe it can be treated with an Epidural Blood Patch (EBP) [8]. In our study, we aim to compare the prevalence of back pain in spinal and general surgery after a cesarean section which was conducted in Alzahrawi hospital.

MATERIALS AND METHODS

A cross-sectional study was conducted in Alzahrawi Hospital in Damascus, Syria which included 279 patients who have gone through a cesarean section under general and spinal anesthesia.

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Received: 04-Jan-2023, Manuscript No. JACR-23-20952; **Editor assigned:** 06-Jan-2023, PreQC No. JACR-23-20952 (PQ); **Reviewed:** 20-Jan-2023, QC No. JACR-22-20952; **Revised:** 27-Jan-2023, Manuscript No. JACR-23-20952 (R); **Published:** 03-Feb-2023, DOI: 10.35248/2155-6148.23.14.1094

Citation: Alkhalaf S, Rakmani N, Olwan R (2023) Prevalence of Back Pain and Headache after Spinal Anesthesia for Cesarean Section Compared to General Anesthesia. J Anesth Clin Res. 14: 1094

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Our sample included patients who have done a CS and don't have a history of back pain while it excluded those who had a history of back pain, who have done surgery on the spinal cord, and those who had kidney and liver diseases. Data were analyzed using SPSS version. Descriptive analysis was done on all our descriptive variables. Percentages and frequencies were used for qualitative data, while the mean and standard deviation were used for quantitative data. A Chi-square test was done to examine the correlation between quantitative data.

RESULTS

Our study was made up of 279 participants who have done a CS under the two types of anesthesia. The mean age of patients was 30.7 with a st.d of 7.92. The youngest individual was 15 years old while the oldest was 46 years old. The mean height was 160.83 cm, the shortest patient was 145 cm and the longest was 173. The average weight was 74 kg, the biggest weight was 108 kg while the smallest weight was 55 kg. Mean BMI values were 28.56 kg/m², the largest BMI value was 39.66 kg/m² while the smallest value was 21.04 kg/m² (Table 1).

Age	BMI values
Mean (st.d)	(7.92 ± 30.07)
Youngest age	15
Oldest age	46
Height	
Mean (st.d)	(4.97 ± 160.83)
Smallest value	145
Largest value	173
Weight	
Mean (st.d)	(7.77 ± 74)
Smallest value	55
Largest value	108
BMI values	
2.19 ± (28.56)	(2.19 ± 28.56)
Smallest value	21.04
Largest value	39.66

Table 1: Demographic variables of BMI.

As for the most commonly used anesthesia type, spinal anesthesia was the most common with 230 (82%) patients, while general anesthesia was used only in 49 (18%) patients. Fentanyl was the most common anesthetic used in surgery, it was used in 39 (13%) patients. Followed by fentanyl with local/peptide, which was used in 27 (10%) patients. As for analgesics

used after surgery, intravenous paracetamol was the most commonly used (60 patients, 22%), followed by sodium diclofenac and ketozor (7 patients, 2%) and the longest being nearly two hours (Table 2).

Types of anesthesia	
Regional	230 (82)
General	49 (18)
Anesthetics used during surgery	
Fentanyl	36 (13)
Fentanyl with Dolezal/Peptides	27 (10)
Not available	216 (77)
Analgesics used after surgery	
Sodium diclofenac	3 (1)
Intravenous Paracetamol	60 (22)
Ketozor	4 (1)
Not available	212 (76)
Surgery time	
Mean (st.d)	1.13 (± 0.25)
Shortest time	1
Longest time	2

Table 2: Variables regarding anesthesia.

Regarding postoperative complications, back pain was found in 96 (34%) patients while it wasn't found in 183 (66%) patients. Back pain was acute in 13 (5%) patients, dull in 20 (7%) patients, diffuse in 16 (6%) patients, localized in 17 (6%) patients, and stabbing pain was found in 30(11%) patients. VAS scale was used to measure the severity of pain. The average pain scale was 1.15 degrees, the lowest degree being 0 and the highest being [9]. As for headaches, 149 (53%) patients suffered from headaches while 130 (47%) patients didn't have headaches. Headache was frontal in 82 (29%) patients, occipital in 52 (19%) patients, and temporal in 15 (5%) patients. Non-pulsatile headaches were the most common (86 patients, 58%) and pulsatile were found in 63 (43%) patients. Standing was the most common stimulant for headaches (58%), while the movement was the second most common stimulant (42%). Intravenous Paracetamol was the most common analgesic used after surgery, as it was used in 79 (28%) patients, followed by sodium diclofenac used in 30 (11%) patients in Table 3.

Pain	
Yes	(34)96
No	(66)183
Type of pain	
Acute	(5)13
Dull	(7)20
Diffused	(6)16
Localized	(6)17
Stabbing	(11)30
No pain	(66)183
VAS pain severity scale	
Mean(st.d)	(2 ±)1.15
Smallest value	0
Largest value	9
Presence of headache	
Yes	(53)149
No	(47)130
Type of headache	
Frontal	(29)82
Occipital	(19)52
Temporal	(5)15
No headache	(47)130
Pulsatile	(42)63
Non-pulsatile	(58)86
Headache stimulant	
Standing	(58)86
Moving	(42)63
Type of analgesics used after surgery	
Sodium diclofenac	(11)30
Paracetamol	(28)79
Diclofenac, Paracetamol	(4)10
Paracetamol, Cordain	(1)2
Ketozor	(3)7

Ketozor, Cordain	(0.003)1
Ketozor, Paracetamol	(3)8
No medication used	(51)142

Table 3: Post-operative complications in pain.

We did not find a statistical correlation between the presence of back pain or headache and the type of anesthesia, as patients who suffered from back pain and undergone general anesthesia were 14 (29%), and patients who had back pain and undergone spinal anesthesia were 82 (36%). With a P value of more than 0.05 (0.343). The length of time spent mobilizing during surgery and the surgical positioning are two additional factors that could exacerbate post-spinal back pain following a cesarean section. In addition, low back pain during and after delivery is a possibility during the pregnancy itself. A small number of studies demonstrated that at least half of pregnant women suffer from low back pain. Additionally, up to 40% of patients experience persistent low back pain six months after delivery. This indicates that a patient's risk of developing low back pain is quite high simply by being pregnant. What's more, to have the conveyance with sedation and furthermore cesarean area will expand the gamble of having low back torment. There was also no correlation between the occurrence of headache and anesthesia type, as patients who had headaches and undergone general surgery was 41%, compared to spinal anesthesia (56%), With a P value of 0.051 (>0.05) (Table 4).

Headache/back pain	Types of anesthesia		P value
	Regional	General	
Back pain			
Yes	82 (36)	14 (29)	0.343
No	148 (64)	35 (71)	
Headache			
Yes	129 (56)	20 (41)	0.051
No	101 (44)	29 (59)	

Table 4: Relationship between anesthesia type and occurrence of back pain and headache.

As for the relationship between the type of anesthesia, BMI, age means, and pain scale we found a statistical relationship between these variables. The average BMI in patients who have undergone general anesthesia was 29.35 kg/m², compared to 28.39 kg/m² in spinal anesthesia, with a P value of 0.0165. We didn't find a statistical correlation between age and pain scale as P values were 0.365 and 0.748 in Table 5.

Statistical correlation	Anesthesia type		P value
	Regional	General	
Age mean/BMI/pain scale			
Age	29.87	31	0.365
BMI	28.39	29.35	0.0165
Pain scale (VAS)	1	1.06	0.748

Table 5: Statistical correlation between age and pain scale in P values.

DISCUSSION

Anesthesia can be regional or general. General anesthesia is associated with better hemodynamic stability than regional anesthesia [9]. Regional anesthesia is done by applying anesthetics through the spinal cord or through the dura matter, which results in better surgical outcomes in terms of avoiding mechanical ventilation and reducing the amount of blood loss [10]. Both types of anesthesia can cause complications in older people. General anesthesia can increase pulmonary complications, hypotension and nausea, and vomiting after surgery [11,12]. Regional anesthesia can cause hypotension during surgery, headaches, and injury to neurons and is a contraindication in severe aortic stenosis and coagulation defects [13]. The main aim of choosing an anesthetic type for CS is to ensure the well-being of the fetus and the mother. Operations have become safer as the years have gone by, but there is still morbidity and mortality that can affect the fetus and the mother [14]. General anesthesia or spinal anesthesia or epidural anesthesia can all be applied during CS. Around 96 patients in our study have suffered from back pain after CS, 82 of those undergone regional anesthesia, compared to only 14 who have undergone general anesthesia. We haven't found a correlation between anesthesia type and the occurrence of back pain. Probable causes for back pain are hematoma formation, abscess formation, and hyper expansion of ligaments. We found that to be similar to a study done by Benzon et al. which showed that there wasn't a huge difference in the occurrence of back pain between the two types of anesthesia [15]. Another study, in contrast to our results, has found a link between back pain and spinal anesthesia compared to general anesthesia [16]. According to a Rabinowitz study, comparing the median and paramedian approaches to spinal anesthesia in 100 patients who underwent lower abdominal and lower limb surgeries revealed that the paramedian approach had fewer attempts at puncture, resulting in fewer incidents of post-spinal backache. The paramedian approach is thought to be easier than the median approach, which is a major reason for the lower number of puncture attempts. The fact that the paramedian approach causes fewer backaches is attributed in part to the fact that it causes less damage to the back's anatomical structure. And explained that the paramedian approach will allow the needle to enter the ligamentum flavum and dura without entering any other ligaments, such as the supraspinous or interspinous. Because of the larger interlaminar window, the needle will have better access and will cause less damage to the dura. The number of

attempts became the only significant variable that affects the incidence of post-spinal back pain, and there was no significant difference in the incidence of post-spinal back pain between the median and paramedian approaches in urologic surgeries.

CONCLUSION

A frequent iatrogenic complication of spinal anesthesia is postdural headache which is related to accidental dural puncture and leakage of cerebrospinal fluid. Evidence has shown that the prevalence of headache is between 0%-42.6% after spinal anesthesia compared to 81% in accidental dural punctures. Every patient undergoing spinal anesthesia-assisted cesarean section surgery is likely to experience back pain at some point. There is still a lack of clarity regarding the precise cause of post-spinal backache. However, there are a number of measures that can be taken to lessen the likelihood of developing post-spinal backache. These measures include using a paramedian approach, using a small needle without an introducer, and making fewer attempts. This supported our study which showed that 129 (56%) patients had headaches after regional anesthesia, compared to 20 (41%) patients who suffered from headaches after general surgery. Our study has shown that there's no link between the anesthetic procedure and the occurrence of back pain and headaches, even though most of the participants have gotten regional anesthesia.

DECLARATIONS

Funding

This research received no specific grant from SPU or any other funding agency in the commercial, Public, or non-profit sectors.

Availability of data and materials

All data related to this paper's conclusion are available and stored by the authors. All data are available from the corresponding author at a reasonable request.

Ethics approval and consent to participate

This study was approved by the Institutional Review Board (IRB) at the Syrian Private University (SPU). All Participants confirmed their written consent by signing the consent form. Participation in the study was voluntary and participants were assured that anyone who was not inclined to participate or decided to withdraw after giving consent would not be victimized. All information collected from this study was kept strictly confidential.

CONSENT FOR PUBLICATION

Not applicable.

COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHOR'S CONTRIBUTIONS

RO, SA, and NR all participated in the preparation for this study. RO was responsible for data analysis, SA participated in the literature search and write-up, and NR participated in the study design and reviewed the final draft.

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