

Misconceptions about subarachnoid anesthesia block in the Egyptian female patients; causes and management

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Abstract

Background and aims: Spinal anesthesia (SA) is widely used for many surgeries and when compared to general anesthesia (GA), it has lower rates of complications. However, anxiety or refusal of regional technique in our country is common and multi factorial. This study tried to find the main causes of refusal of SA and to suggest different solutions for the associated anxiety.

Methodology: 160 adult Egyptian female patients (over 18 y of age), ASA II, who were enrolled for elective cesarean delivery were included in this study. During a preoperative visit a questionnaire was given to those who refused SA to enquire about their worries about SA, and to suggest different solutions to relieve the anxiety associated with SA as well as to describe the most frequently associated complications.

Results: Higher rate of SA acceptance was noticed among urban and employed patients with no effect of education on their decision. Fear of post spinal backache was the leading cause (90.75%) of refusal in patients, followed by fear of intraoperative pain in 85.83%, while fear of residual paralysis was the least common cause (13.33%). Sedation was the effective method to overcome anxiety during spinal anesthesia in 56.67% of patients. PONV represents the most frequent complication associated with SA, in 25.83% patients.

Conclusion: In conclusion, urban residency and employment status positively affect the decision of SA acceptance, however; educational level has no effect. Post spinal backache and fear of intraoperative pain were the principle causes of SA refusal. Adequate sedation is the most effective method to alleviate anxiety from SA. PONV and hypotension are common unwanted complications of SA.

Key words: Spinal anesthesia; Satisfaction; Cesarean section; Backache; PDPH; Complications, spinal anesthesia

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1. Introduction

Lumbar puncture is routinely performed by anesthesiologists for many purposes such as delivering local anesthetics into subarachnoid space for abdominal and lower limbs surgery, cesarean delivery, obtaining CSF samples for chemotherapeutic drugs.¹ Compared to general anesthesia (GA), spinal anesthesia (SA) has lower rates of venous thromboembolism, myocardial infarction, less requirement of postoperative analgesia, decreased sympathetic response to surgical stimulation, and several other complications.² However, complications occurring during or after anesthesia and discomfort

from the procedure or positioning for neuraxial block may be linked to fear of SA.

The primary aim of this study was to assess the main causes for refusal by parturients for SA for cesarean section. Secondary outcomes were to investigate the most effective method for anxiety management during SA, degree of satisfaction after having SA and the common unwanted complications associated with SA in this group.

2. Methodology

This prospective study was carried out at the Department of Anesthesiology, Mansoura University Main Hospital. from May, 2018 to August 2019, after

obtaining the approval from Ethics Review Committee of Mansoura Faculty of Medicine and informed consent of all patients.

A total of 160 adult Egyptian female parturients (ages over 18 y), ASA II, who were submitted for elective surgical cesarean section were included in this study. Patient refusal, patients with history of associated neurological disorder (seizures, spinal anomaly, low back pain, and prior back surgery), skin infection at puncture site, sepsis, drug allergies and coagulation defects, were excluded from the study. Pregnant females with hypertensive disorder, emergency cesarean sections due to fetal distress or other causes, were also excluded.

During pre-anesthetic assessment visit, patients were asked if they prefer to have GA or SA for their prospective surgery. Those patients who agreed to have SA were excluded from the survey. Others who refused having SA were given a survey to investigate causes of misconceptions and thus refusing SA.

The questionnaire was based upon some common beliefs held by patients who had had SA previously, and from previous studies. We collected the most common items and each one was tested for validity and reliability through a pilot study.^{5,6,7} The questions in this survey included a series of closed statements answered “Yes” or “No”. The items of questionnaire are shown in Box 1. The patients were asked to choose one or more causes of refusal of SA.

- | Box 1: Survey questions | |
|--------------------------------|---|
| 1- | Advice from relatives |
| 2- | Fear of needle prick pain |
| 3- | Fear of residual lower limb numbness |
| 4- | Fear of intraoperative pain |
| 5- | Fear of performer |
| 6- | Fear of residual paralysis |
| 7- | Post-spinal backache |
| 8- | Post dural puncture headache (PDPH) |
| 9- | Unable to explain |

After completing the questionnaire, a detailed explanation of subarachnoid anesthetic block procedure and the principles, including all anatomical, physiological and pharmacological facts, was shared with the patient. The steps of the anesthetic technique were explained in simple words. Finally, possible complications and the appropriate methods to deal with and how to react if she felt discomfort or anxiety during the surgery.

Then the patients were asked if they had changed their misconceptions about SA and if they would proceed with regional anesthesia. Patients who accepted SA, were investigated for satisfaction after SA and if they would opt for SA in their subsequent surgery.

The anesthesiologists were asked for their opinion about the most effective technique to alleviate their patients’ anxiety. We defined a 4-step ladder approach (Box 2).

- | Box 2: 4 step approach - Anesthesiologists | |
|---|--|
| 1- | Intraoperative assurance and friendly communication |
| 2- | Distraction techniques (listening to music, deep breathing and meditation), |
| 3- | Giving sedation (3-5 mg midazolam) |
| 4- | Administration of GA. |

Preloading with normal saline, 500 to 1,000 ml was done to prevent hypotension and SA was administered using 0.5% heavy bupivacaine.

On the day after surgery, trained anesthesia personnel visited all patients and collected postoperative data, including patient satisfaction score. Postoperative nausea and vomiting (PONV), urinary retention, postoperative backache, PDPH, and transient neurologic symptom (TNS).

Sample size

Sample size of this study was calculated using PS software for Windows version 10 according to differences in number of backache as a cause of refusal in the pilot study of patients. It revealed 129 patients to obtain power of about 80%. We increased the number of patients up to 160 patients to compensate 25% possible dropouts.

Statistical analysis

Statistical analyses were performed using SPSS software (Version 19.0, SPSS Inc., IL, USA). Data are expressed as mean ± SD, median (range) or number (%). Associations of categorical variables with patient refusal were assessed using chi square tests. Effect modifiers were controlled through stratification of age, parity, education status, to see the effect of these on outcomes. P < 0.05 was considered statistically significant. Face validity of the used questionnaire was tested by showing the survey to untrained individual to see whether they think all items look suitable or not. Construct validity was tested using SPSS, moment Pearson correlations. Reliability was tested by two

means; first, during pilot study test-retest reliability; second by using SPSS, Cronbach alpha test Dichotomous question items.

3. Results

160 adult pregnant female patients were initially enrolled in this study. 40 patients asked for GA from the start of the study. 120 patients completed the study. Demographic data are presented in (Table 1).

In the current study, post spinal backache was the leading cause of refusal in (90.75%) of the studied group, followed by fear of intraoperative pain in (85.83%), fear of needle prick pain in (80.83%), advice from relatives in (71.67%), fear of residual lower limb numbness in (44.17%), PDPH in (25.83%), unable to explain in (22.5%), fear of performer in (15%) and lastly fear of residual paralysis in (13.33%) patients (Figure 2).

Table 1: Demographic data of the overall study population (data presented as mean ± SD, number (percentage))

| Patient characteristics | Study group (n = 120) |
|-------------------------|----------------------------|
| Age (year) | 28.4 ± 10.13 |
| Height (cm) | 159.1 ± 13.8 |
| Weight (kg) | 76.4 ± 18.4 |
| Residency | Urban: 69 (57.5%) |
| | Rural: 51(42.5%) |
| Education | Educated: 94 (78.3%) |
| | Non-educated: 26 (21.67%) |
| Employment | Employment: 106 (88.3%) |
| | Non-employment:14 (11.67%) |

In order to alleviate anxiety, 56.67% needed sedation, 20% distraction of attention, 17.5% explanation, assurance and communication, and only 5.83% of patients had to be converted to GA to complete the surgery.

Among all of our patients undergoing SA, the level of satisfaction was 76.4% and those desired to have SA in the future were 56.1%.

Lastly, the most frequent complication was PONV (25.83%), hypotension (19.66%), dyspnea (19.17%), bradycardia (15.17%), PDPH (13.33%) backache (10.83%) and transient neurological deficit (1%) in our patients (Figure 3).

4. Discussion

Regional anesthesia nowadays, has gained worldwide acceptance, and its physiological effects provide a better outcome for cesarean section, as it provides minimal newborn depression; moreover, GA is associated with significantly high maternal and neonatal morbidity and mortality.^{9,10}

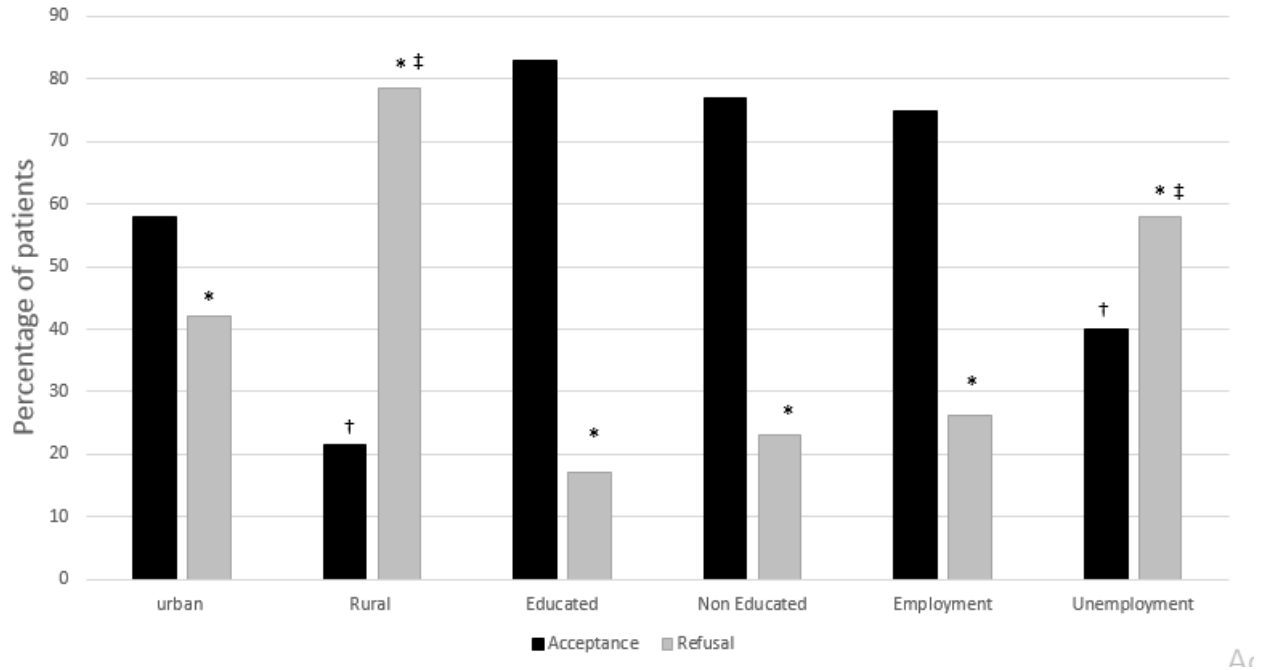
In the same way, recent trials describe benefits of SA to be; early cannula removal, early ambulation, early breast-feeding initiation and potential for shorter hospitalization period after cesarean delivery.¹¹

However the choice of anesthesia techniques can be expected to differ between countries and cultures. It was noticed that the educational, marital, employment status and location were important factors in determining the choice of anesthesia.¹² In developed countries, the rate of regional anesthesia is more than 91% for elective cesarean section and GA is used only in 9% of cases.¹³ Specifically, in Europe and USA, the rate of GA is as low as 3% which seems unbelievable in our population.¹⁴

Anxiety is a common concern about regional anesthesia as a whole and SA specifically. Patients are usually concerned about anesthetic complications.¹

In the current study, the main causes for anxiety and refusal of SA among our patients were: post spinal backache, followed by acquaintances fear of intraoperative pain, needle prick pain, lower limb numbness, PDPH, fear of performer, residual paralysis and negative advice by the relatives.

Postoperative backache was commonly associated with dissatisfaction and refusal of spinal blocks. Even though backache may not be directly related to spinal block and related to other causes such as positioning during surgery, a tightly applied cast or surgical dressing, surgical trauma, operating time, age, needle type, number of punctures or pre-existing back pain, all these factors make it difficult to diagnose the actual cause of back pain.^{3,16}



* $p < 0.05$ is considered significant when compared between acceptance and refusal in each group.

† $p < 0.05$ is considered significant when compared between acceptance between each coupled groups.

‡ $p < 0.05$ is considered significant when compared between refusal between each coupled groups.

Figure 1: Residency, Educational level and Employment status of all patients grouped according to their acceptance and refusal. Data are expressed as number and percentage

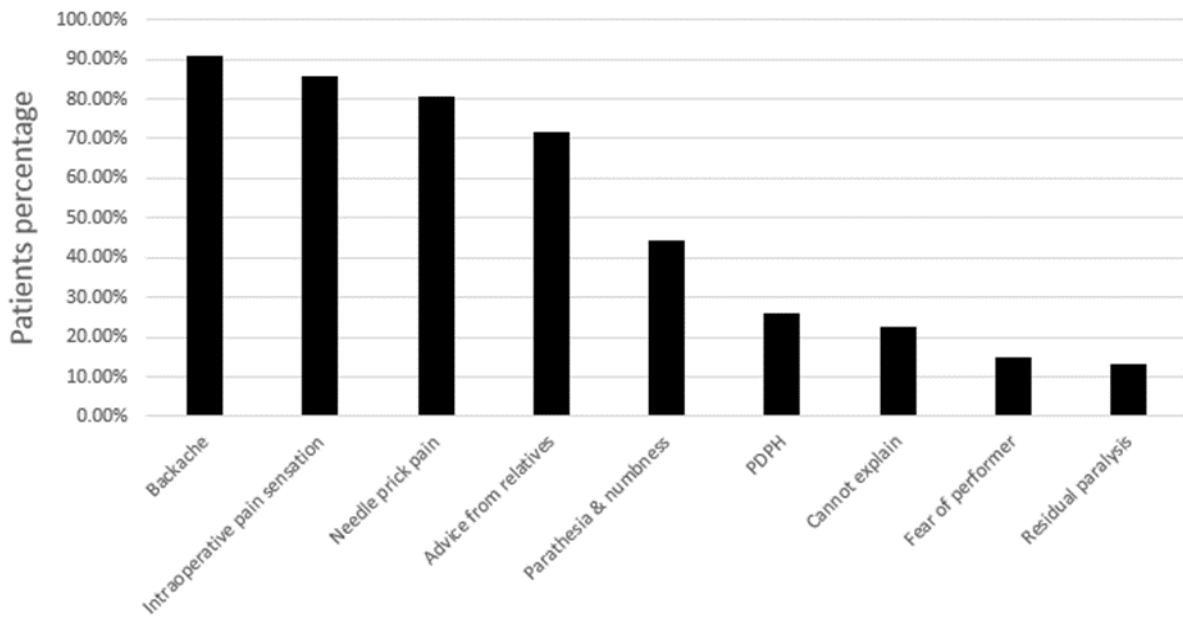


Figure 2: Different causes of misconception and refusal in the studied group

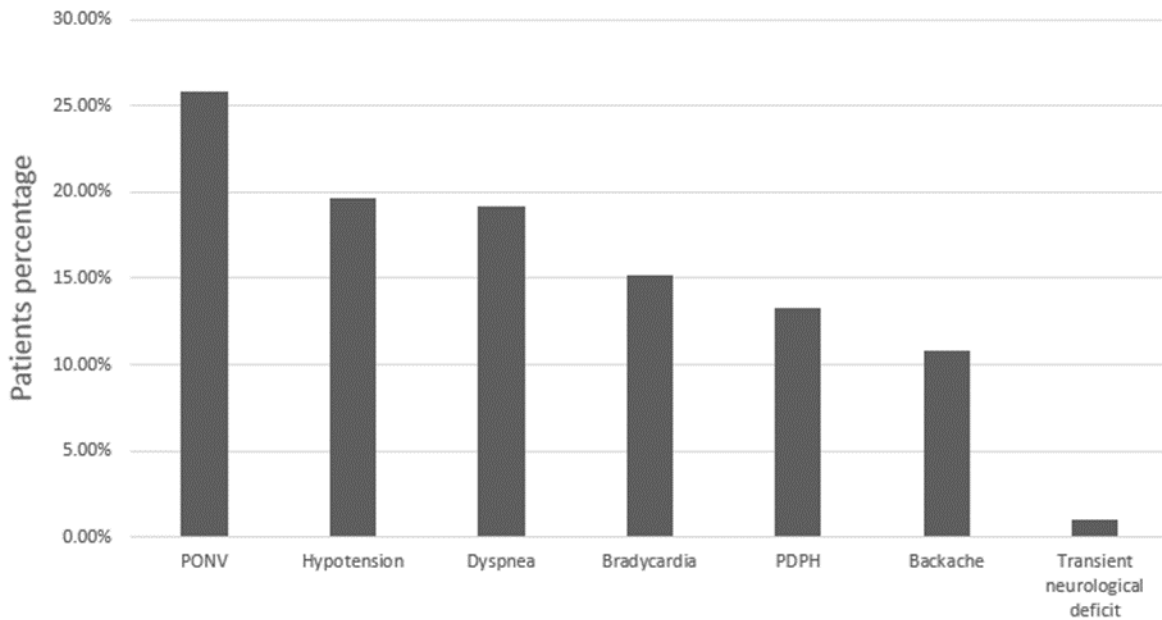


Figure 3: Post-operative complication incidence of the studied group. Data are expressed as number and percentage

In a study by Horlocker TT, post spinal backache was the main cause of refusal in 32 (20.1%) of the studied group, needle prick pain in 62 (39%), peri-operative pain in 14 (8.8%), advice from relatives in 24 (15.1%) and PDPH in 27 (17%) patients. These results match to a great extent to our study outcome.¹⁷

Another small study mentioned needle prick pain 23 (5.6%), post spinal backache pain 107 (26.1%), headache 29 (7.1%), paralysis 10 (2.4%), numb legs 12 (2.4%), inadequate anesthesia 37 (9%) and bad experience with the anesthetist 32 (7.8%) as the common causes of refusal in women undergoing cesarean section.^{5,6}

In another study, the reasons for refusal of SA were as follow: fear of awareness during operation 14 (7%) and failed SA 2 (1%). Among those obstetrics patients who refused regional anesthesia, 52% of the fears of all respondents were about paralysis and neurologic disorders, 42% about peri-operative pain, 38% about seeing the surgery and hearing the surgical procedure, 33% were worried of backache and 15% were afraid of needle. 94 of the 100 patients were convinced to receive regional anesthesia after counseling and explanation with assurance in pre-operative assessment.⁷

Additional reported causes of anxiety may include inaccurate information conveyed to the patient by the acquaintances, the internet, or advertising media. Patients may have been disinformed by television or print stories that often exaggerate the frequency and impact of regional anesthesia complications.¹⁸

Many different strategies employed to reduce patient anxiety, e.g., talking to the patient and reassurance, giving sedation and distraction techniques (listening to music, deep breathing and meditation), watching the surgery through a screen in the operating room, a printed leaflets, allowing patients to see their nerves while being anesthetized on the ultrasound screen or conversion to GA.^{19,20} Also, viewing an anesthetic video about regional anesthesia pre-operatively has been shown to decrease patients' anxiety. Indeed, a confident, professional and friendly relationship with the patient reduces anxiety.²¹

In our study sedative administration was the most effective method to alleviate anxiety during SA, 56.67% of the studied patients received sedation at the start of the surgery, and 20% after surgery started. Assurance and distraction of attention was successful in 17.5% of patients and 5.83 needed GA to complete the surgery.

It is not easy to confirm the variables related to patient satisfaction. Side effects, such as postoperative backache, inadvertent mistakes, and unskillful techniques, can negatively affect patient perspective about SA.²²

In our study, the level of satisfaction and future acceptability of SA was quite high, and matched the majority of the earlier satisfaction studies.²³ However, the rate of SA rejection was relatively high, compared to other studies. Choi et al. reported 31 out of 194 patients (16%) would reject receiving SA if they had a chance to have it again.³ It is well known that dissatisfaction after SA is related to repeated attempts of spinal block, pain during spinal block, inadequate analgesia and post-operative urinary retention.²⁴

In the current study, the most frequent complications were PONV, hypotension, dyspnea, bradycardia, PDPH, backache and transient neurological deficit in that order. These are completely different from the main cause reported by Bhatt Arai et al. in which it was prolonged immobility of lower limbs.²⁵

5. Limitations of the study

The current study investigated the main cause of refusal of SA among a single cohort of females undergoing elective cesarean section. A broad based study, also including other categories of patients, may add to the strength of the study. Also analysis of refusal causes based on social groups may help to obscure the roots of SA refusal problem among population.

6. Conclusion

In conclusion, spinal anesthesia acceptance is higher among urban and employed female patients for cesarean sections. Education status has no effect. Post spinal backache and fear of intraoperative pain were principle causes of spinal anesthesia refusal, followed by fear of needle prick pain, residual lower limb numbness or paralysis and post dural puncture headache. Sedation is useful to alleviate anxiety and increase satisfaction among those patients and needs to be used liberally.

7. Conflict of interest

Nil declared by the authors.

8. Authors' contribution

HIT: Study design, data analysis, editing

MAH: Data collection, manuscript writing

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