Original Article

Effectiveness of Prophylactic Phenylephrine Infusion in Prevention of Subarachnoid Block Associated Hypotension for Elective Cesarean Section

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ABSTRACT

Objective: The aim of doing this study is to document and examine the prophylactic effect of phenylepherine in prevention of mother hypotension and to evaluate the maternal and fetal conditions.

Study Design: Descriptive Case Study

Place and Duration of Study: This study was conducted at the Anaesthesia Department, Ayub Teaching Hospital, Abbottabad from 5/5/2017 to 5/11/2017.

Methods: Sample size was 70. Sample size was calculated using the WHO software for sample size calculations in health studies. Data was collected through Non-probability consecutive sampling technique.

Results: In this study age distribution among 70 patients was analyzed as 47(67%) patients were in age range 15-30 years while 23(33%) patients were in age range 31-42 years. Mean age was 30 years with SD ±12.64. Booking status among 70 patients was analyzed as all the 70 patients were booked patients. Status of parity among 70 patients was analyzed as 27(38%) patients were primi para while 43(62%) patients were multi para. Status of obstetrical history among 70 patients was analyzed as 12(17%) patients had obstetrical history while 58(83%) patients had no obstetrical history.

Conclusion: Our study concludes that prophylactic phenylepherine infusion was 91% effective in the prevention of subarachanoid block associated hypotension for elective cesarean section.

Key Words: Prophylactic Phenylephrine Infusion, Subarachnoid Block, Hypotension, Elective Cesarean Section

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INTRODUCTION

Cesarean section is one of the most generally performed activity. Its rate has been expanding. As of late, spinal sedation become one of most satisfactory sedative strategy. Because of its fast beginning, power, symmetric tangible and engine block, it is effectively utilized. It is savvy as it is more affordable and less measure of careful discharge[1]. Among different difficulties, hypotension is one of normal with frequency of upto 71%.

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Systolic hypotension higher than 20-30% of patient pattern pulse can prompt lower perfusion pressure, introducing as queasiness, heaving, tipsiness and lower awareness [2].

It likewise causes uteroplacental hypoperfusion with fetal hypoxia and acidosis. Strategies utilized in forestalling hypotension incorporates intravenous rehydration, vasopressor drugs and actual techniques like leg ties and pressure stockings. Phenylephrine is most generally vasopressor drug utilized[3]. Phenylephrine is a specific alpha-adrenergic agonist. It is utilized to increment pulse, to widen understudy and as a decongestant. It likewise causes bradycardia and reflex hypertension [4]. It could be given intravenous in 20-100 microgram increases. It is neither inotropic or chronotropic so it explicitly increments circulatory strain without expanding pulse or contractility [5]. It is helpful in the event that there is now tachycardia and/or has cardiomyopathy.

Spinal sedation was created in the last option part of the last century when the German doctors Casket and Hildebrandt infused cocaine into their own cerebrospinal liquids. They encountered fluctuating levels of loss of sensation and the undesirable symptom of "spinal migraine," otherwise called post dural cut

cerebral pain (PDPH) [6]. From that point forward, spinal sedation has gone through times of prevalence and disapproval. Its utilization in obstetrics has been a gift by and large, yet has made a few issues in others. This short survey considers the present status of-the-specialty of spinal sedation and its utilization in obstetric relief from discomfort [7].

The utilization of CSE for cesarean conveyance is thought about when the normal term of the medical procedure is long, as the epidural catheter can broaden the sedative time endlessly. More normal is the utilization of single-shot spinal sedation for cesarean conveyance [8]. This procedure is straightforward and gives significant sedation to 2-4 hours, contingent upon the medications utilized. Ongoing advances in how we might interpret spinal sedation have significantly additionally expanded the prominence of this procedure[9]. Postoperative relief from discomfort is quite often furnished with a little portion of spinally directed morphine infused with the neighborhood sedative. Spinal morphine in tiny does, like 0.1-0.2 mg, can give 18-24 hours of compelling relief from discomfort after cesarean conveyance[10]. Handily treated incidental effects incorporate sickness and tingling, and once in a while, respiratory wretchedness. Patients getting spinal morphine can move around, are not calmed, and are commonly exceptionally happy with the relief from discomfort [11].

METHODS

This descriptive Case series was conducted in Anaesthesia Department, Ayub Teaching Hospital, Abbottabad from 5/5//2017 to 5/11/2017. Sample size was 70. Sample size was calculated using the WHO software for sample size calculations in health studies. Data was collected through Non-probability consecutive sampling technique.

Inclusion Criteria

- Age (15-42 years)
- Singleton pregnancy
- Booked patients were included.
- Any parity was included.
- ASA 1 or 2.

Exclusion Criteria

- Pre-existing medical problems
- Major congenital Anomalies
- Refusal to participate in study
- Allergy or hypersensitivity to phenylephrine

Data collection procedures: All patients who meet the inclusion criteria presenting to Anaesthesia Department were included after approval of ethical committee. Informed consent of patients was taken after benefits of this study are explained to them. These women were remain admitted in unit and managed as per protocols of the unit. These women were subjected to detailed history including booking status, obstetrical history, past medical and surgical history and physical examination. All the above information was recorded on a pro forma by the trainee.

Data analysis: Data analysis was done using SPSS version 16. Quantitative variables like age, parity were described as mean ± standard deviation. Categorical variables like booking status, obstetrical history and effectiveness were described as frequencies and percentages. Effectiveness was stratified by age, parity, booking status, obstetrical history to see effect modification. Post stratification chi-square test was applied in which P value ≤0.05 was considered as significance value.

RESULTS

In this study age distribution among 70 patients was analyzed as 47(67%) patients were in age range 15-30 years while 23(33%) patients were in age range 31-42 years. Mean age was 30 years with SD ±12.64. Booking status among 70 patients was analyzed as all the 70 patients were booked patients. Status of parity among 70 patients was analyzed as 27(38%) patients were primi para while 43(62%) patients were multi para. Status of obstetrical history among 70 patients was analyzed as 12(17%) patients had obstetrical history while 58(83%) patients had no obstetrical history.

Table No. 1: Demographic profile of patients

AGE	FREQUENCY	PERCENTAGE
15-30 years	47	67%
31-42 years	23	33%
Total	70	100%
Booking Status		
Booked	70	100%
Unbooked	0	0%
Total	70	100%
Parity		
Primi Para	27	38%
Multi Para	43	62%
Total	70	100%
Obstetrical History		
Yes	12	17%
No	58	83%
Total	70	100%

Effectiveness of prophylactic phenylepherine infusion among 70 patients was analyzed as prophylactic phenylepherine infusion was effective in 64(91%) patients and was not effective in 6(9%) patients. Chi square test was applied in which P value was 0.9792

Table No. 2: Effectiveness of Prophylactic Phenylepherine Infusion

Effectiveness	Frequency	Percentage
Yes	64	91%
No	6	9%
Total	70	100%

Stratification of Effectiveness of prophylactic phenylepherine infusion with respect to age, parity, booking status, obstetrical history is also provided.

Table No. 3: Stratification of effectiveness of prophylactic phenylepherine infusion w.r.t booking status

Effectiveness	Booked	Unbooked	Total
Yes	64	0	64
No	6	0	6
Total	70	0	70

Chi square test was applied in which P value was 0.0000

Table No. 4: Stratification of effectiveness of prophylactic phenylepherine infusion w.r.t parity distribution

Effectiveness	Primi para	Multi Para	Total
Yes	25	39	64
No	2	4	6
Total	27	43	70

Chi square test was applied in which P value was 0.7828

Table No. 5: stratification of effectiveness of prophylactic phenylepherine infusion w.r.t obstetrical history

Effectiveness	Yes	No	Total
Yes	10	54	64
No	2	4	6
Total	12	58	70

Chi square test was applied in which P value was 0.2711

DISCUSSION

Cesarean section is one of the most commonly performed operation. Its rate has been increasing. In recent years, spinal anaesthesia become one of most acceptable anaesthetic technique [12]. Due to its rapid onset, intensity, symmetric sensory and motor block, it is successfully used. It is cost effective as it is less expensive and less amount of surgical hemorrhage [13]. Among other complications, hypotension is one of common with incidence of upto 71%. Systolic hypotension higher than 20-30% of patient baseline blood pressure can lead to lower perfusion pressure, presenting as nausea, vomiting, dizziness and lower consciousness [14].

Our study shows that mean age was 30 years with SD ±12.64. Thirty eight percent patients were primi para while 62% patients were multi para. More over prophylactic phenylepherine infusion was effective in 64(91%) patients and was not effective in 6(9%) patients. Similar findings were observed in another conducted by Siddik-Sayyid and colleagues incidence of hypotension in infusion group was only 20% compared to 90% in recue boluses alone [15-17]. So variable rate infusion can be started at 50μg/min with greater heamodynamic stability and can be increased upto 75-100μg/minandfor bolus dose ranges from 40-100μg [18-20]. Despite a large total dose of phenylephrine administered to the infusion group compared with the control group (median, 1260 μg; interquartile range, 1010–1640 μg; versus median, 450 μg; interquartile range, 300–750 μg; P < 0.0001), umbilical cord blood gases and Apgar scores were similar. One patient in each group had umbilical arterial pH <7.2 [21]. Prophylactic phenylephrine infusion is a simple, safe, and effective method of maintaining arterial blood pressure during spinal anesthesia for cesarean delivery[22].

CONCLUSION

Our study concludes that prophylactic phenylepherine infusion was 91% effective in the prevention of subarachanoid block associated hypotension for elective cesarean section.

Author's Contribution:

Concept & Design of Study:	Naveed Ahmed
Drafting:	Saqib Mehmood Khan, Zain Ul Abidin
Data Analysis:	Attique Afzal Malik, Tariq Abbasi, Muhammad Naeem
Revisiting Critically:	Naveed Ahmed, Saqib Mehmood Khan
Final Approval of version:	Naveed Ahmed

Conflict of Interest: The study has no conflict of interest to declare by any author.

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