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Original Research Article

Post-Dural Puncture Headache: A Tertiary Care Hospital an Observational Study on Causes, Effects and Management

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Abstract: ***Background:*** The current study was carried out to evaluate the association of socio-clinical variables with Post Dural Puncture Headache (PDPH) in the obstetrics and obstetrics patients. Post-dural puncture headache are well-known complications of neuraxial anesthesia in parturients. ***Objectives:*** The aim of this study is to assess the Causes, Effects and Management of post dural puncture headache among obstetric patients in a tertiary care hospital an observational study. ***Methods:*** This is an observational study. The study used to be carried out in the admitted patient's Department of anesthesiology, Rangpur Medical College Hospital, Bangladesh. In Bangladesh for the duration of the period from January 2020 to December 2021. ***Results:*** This study shows that the according to age of 120 Patients aged 18 to 45 years where, 30(25.0%) were 18-25 years, 65(54.17%) were 26-35 years and 25(20.83%) were 36-45 years. And according to gender 21% were Male, 79% were Female. And according to BMI (n=120). According to BMI distribution the <18.5 (underweight range), 18.5 to <24.9 (Normal), 25-29.9 (Overweight) and ≥30.0 (Obese) were 15(12.5%), 55(45.83%), 35(29.16%) and 15(12.5%) respectfully. ***Conclusions:*** We concluded that in the present study about obstetric populace had better prevalence of PDPH in contrast to obstetric population. PDPH was once related with enhanced quantity of efforts; sorts of method used, and begin of ambulation.

Keywords: Association, Post Dural Puncture Headache, Obstetrics, Socio-clinical variables and Obstetrics patients.

INTRODUCTION

Spinal block is a reliable and easy technique frequently used in the anaesthetic practice. However, the spinal anaesthesia especially in obstetrics is associated with increased incidence of post dural puncture headache (PDPH) leading to prolonged hospital stay, increased morbidity and therefore decreased preference to subarachnoid block in the subsequent pregnancies [1].

There are many factors affecting the frequency of PDPH. These factors may include age, female sex, needle size and type, pregnancy, previous history of PDPH, median paramedian difference in approach,

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puncture level [2]. The PDPH, which cause significant morbidity in obstetric patients, has higher incidence because of the increased cerebrospinal fluid (CSF) pressure related to pregnancy, dehydration, blood loss, postpartum diuresis, hormonal imbalance, high serum estrogen levels, and increased peridural pressure [3, 4]. There is also direct relation between the incidence of the PDPH and the needle tip design, 30% with 22 G quincke needles and decreased to 0.37% with the 27 G pencil point needles [5]. The non-cutting needles have been observed to cause less incidence of PDPH [6].

Postdural puncture headache (PDPH) is the most commonplace complication going on after a neuraxial anesthetic in obstetric patients [7]. In the 2004–2009 multicenter Serious Complication Repository (SCORE) mission aiming to estimate the incidence of serious issues associated to obstetric anesthesia care, 0.7% of female who obtained neuraxial anesthetic developed PDPH [8]. The chance of PDPH is estimated at about 50% after an unintentional dural puncture with an epidural needle; it levels between 1% and 10% after a dural puncture with a spinal needle, relying on the needle dimension and type [9]. Although frequently viewed minor, PDPH may additionally preclude women's potential to function daily activities, which includes caring for their baby, and delays clinic discharge. It can also additionally lead to medical institution readmission and accounts for about 1% of postpartum readmissions [10]. Furthermore, PDPH constituted 15% of claims related with neuraxial anesthesia in obstetrics in the 1990–2003 American Society of Anesthesiologists (ASA) Closed-Claims Study [11]. PDPH nevertheless accounts for a substantial percentage of legal responsibility claims in obstetrics [12].

Case reviews point out that major, severe, life-threatening neurologic problems may also comply with PDPH in obstetric patients along with subdural hematoma, cerebral venous thrombosis, or bacterial meningitis [13]. The 2009– 2012 Mothers and Babies, Reducing Risk via Audits and Confidential Enquiries throughout the United Kingdom (MBRRACE-UK) reviews that two of the four deaths related with neuraxial anesthesia in obstetrics resulted from issues of unintended dural puncture throughout epidural catheter placement: 1 cerebral vein thrombosis and 1 subdural hematoma [14]. In addition, retrospective surveys or retrospective case-controlled research recommend an expanded threat of continual headache or persistent back pain obstetric patients [15]. Last, acute pain after childbirth such as ache related with PDPH has been related with a multiplied chance of postpartum depression [16]. Similarly, acute or continual headache or again ache has been related with the improvement of despair in adults with no records of depressive disorders, suggesting that PDPH may additionally be related with the improvement of postpartum depression [17]. An affirmation of the elevated chance of these issues related with PDPH in obstetrics would point out the want for heightened surveillance of ladies with PDPH to well-timed diagnose and deal with these complications. A characterization of the time to onset of these problems would additionally point out how lengthy this surveillance needs to be. This study about aimed to take a look at the speculation that PDPH in obstetric patients is related with a extensively improved postpartum hazard of major neurologic complications (cerebral venous thrombosis, subdural hematoma, and bacterial meningitis), depression, headache, and low back pain.

METHODS

This is an observational study. The study used to be carried out in the admitted patient's Department of Anesthesiology, Rangpur Medical College Hospital, Dhaka. In Bangladesh for the duration of the period from January 2020 to December 2021. This study was carried out on 120 patients the find out about the population including male and female patients above 18 years of age in the Department of Department of anesthesiology, Rangpur Medical College Hospital, Dhaka. The medical Pediatricians, Neonatologist and the surgeon were primarily involved in the decision-making process. The choice of treatment was made by the patient after a full discussion with the multidisciplinary team consisting of pediatricians, neonatologists and pediatric endocrinologists and surgeons.

The data for this study about had been accumulated from patients' medical information and radiographs. Statistical evaluation of the results used to be got via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

RESULTS

Table-I: Distribution of patients by age (n= 120)

Age distribution	n=120	%
18-25	30	25.0
26-35	65	54.17
36-45	25	20.83

Table I demonstrated and distribution of the study according to age of 120 Patients aged 18 to 45 years. Here according to Age distribution, 30(25.0%) were 18-25 years, 65(54.17%) were 26-35 years and 25(20.83%) were 36-45 years.

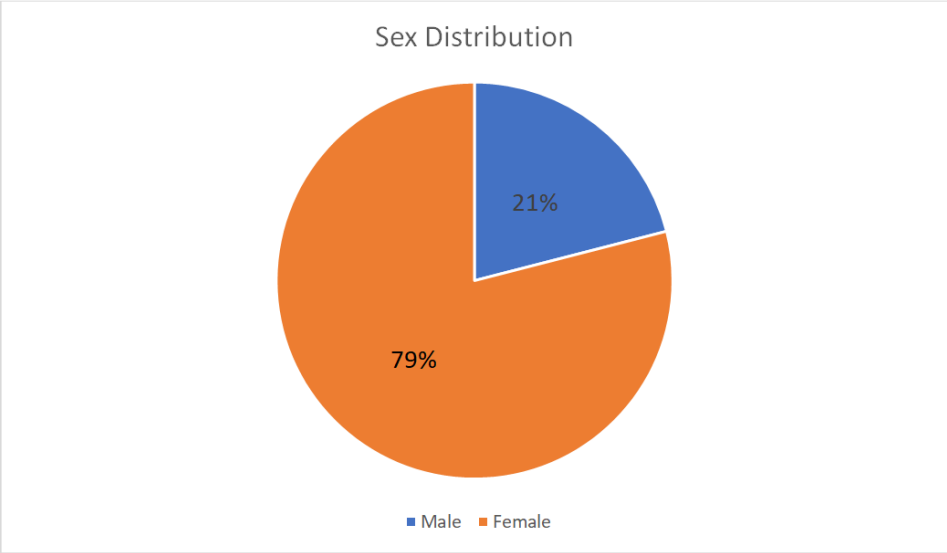

Figure I: Distribution of patients by sex (n= 120)

Figure I demonstrated and distribution of the study according to sex of 120 Patients aged 18 to 45 years. According to gender 21% were Male, 79% were Female.

Table-II: Distribution of the study according to BMI (n=120)

BMI distribution	n=120	%
<18.5 (underweight range)	15	12.5
18.5 to <24.9 (Normal)	55	45.83
25-29.9 (Overweight)	35	29.16
≥30.0 (Obese)	15	12.5

Table II demonstrated the study according to BMI (n=120). According to BMI distribution the <18.5 (underweight range), 18.5 to <24.9 (Normal), 25-29.9 (Overweight) and ≥30.0 (Obese) were 15(12.5%), 55(45.83%), 35(29.16%) and 15(12.5%) respectfully.

Table-III: Distribution of the study according to Diagnosis (%)

Diagnosis	n=120	%
IIH	59	49.16
Optic Neuritis	3	2.5
Peripheral neuropathy	11	9.16
Demyelinating disease	38	31.66
SMA	4	3.33
Autoimmune encephalitis	1	0.83
CNS infection	1	0.83
Dementia	2	1.66
CVT	1	0.83

Table III demonstrated the study according to Diagnosis (%). According to Diagnosis the IIH, Optic Neuritis, Peripheral neuropathy, Demyelinating disease, SMA, Autoimmune encephalitis, CNS infection, Dementia and CVT were 59(49.16%), 3(2.5%), 11(9.16%), 38(31.66%), 4(3.33%), 1(0.83%), 1(0.83%), 2(1.66%) and 1(0.83%) respectfully.

Table-IV: Distribution of the study according to Headache Onset (%)

Headache Onset	n=120	%
1	57	47.5
2	46	38.33
3	14	11.66
4	3	2.5

Table IV demonstrated the study according to Headache Onset. Here, Headache Onset of 1, 2, 3 and 4 were 57(47.5%), 46(38.33%), 14(11.66%) and 3(2.5%) respectfully.

Table V: Estimated rate of spontaneous recovery from post-dural puncture headache

Duration	n=120	%
1-2	40	33.33
3-4	36	30.0
5-7	22	18.33
8-14	10	8.33
3-6 weeks	6	5.0
3-6 months	2	1.6
7-12 months	4	3.33

Table V demonstrated the study according to estimated rate of spontaneous recovery from post-dural puncture headache. According to duration the 1-2, 3-4, 5-7, 8-14, 3-6 weeks, 3-6 months and 7-12 months were 40(33.33%), 36(30.0%), 22(18.33%), 10(8.33%), 6(5.0%), 2(1.6%) and 4(3.33%) respectfully.

DISCUSSION

There are few current large-scale longitudinal analyses of parturient in tertiary- care centers with ADP, PDPH, and different issues over a prolonged duration of time [18, 19].

There are numerous researches that report ADP in the obstetric population, however only a few publications have exposed demographic facts on the patients with ADP [20, 21]. Orbach-Zinger *et al.*, reported multiple features such as age, BMI, parity, kind of delivery, etc. in patients with ADP, however recognized superior cervical dilation as the only element related with a greater rate of ADP [22]. We have been unable to report cervical dilation prior to neuraxial placement in labouring patients due to the fact of the lack of digital medical documents for labour and delivery parameters for a majority of the time length protected in the study.

In our study, according to age of 120 Patients aged 18 to 45 years, where 30(25.0%) were 18-25 years, 65(54.17%) were 26-35 years and 25(20.83%) were 36-45 years. And according to gender 21% were Male, 79% were Female.

We recognized BMI and parity as elements related with the improvement of a PDPH in patients with dural puncture. A few researches have advised an inverse relationship between BMI and PDPH following ADP. For example, Peralta et al. reported a decrease incidence of PDPH in patients with BMI C 31.5 kgm-2 in contrast with patients with BMI \ 31.5 kgm-2 [23].

We analyzed our data on BMI the usage of Peralta *et al.*,'s BMI cut-off value of 31.5, and got comparable results. As a sensitivity analysis, we additionally ran BMI as a non-stop variable. Results did now not vary; a considerably decrease BMI used to be considered in the PDPH group. However, other studies have shown that BMI does not represent a risk factor for the development of a PDPH following neuraxial anesthesia [24, 25].

Our present study demonstrated according to BMI distribution where <18.5 (underweight range), 18.5 to <24.9 (Normal), 25-29.9 (Overweight) and ≥30.0 (Obese) were 15(12.5%), 55(45.83%), 35(29.16%) and 15(12.5%) respectfully. And according to Headache Onset of 1, 2, 3 and 4 were 57(47.5%), 46(38.33%), 14(11.66%) and 3(2.5%) respectfully.

Multiparity was once recognized as a hazard element for the improvement of PDPH after an ADP, with parturients with one or extra preceding births having a higher chance of PDPH (59.4%) in contrast with nulliparous parturients (40.6%). Our outcomes are in settlement with Orbach-Zinger et al. in that multiparity is a danger element for the improvement of a PDPH [26]. We hypothesize that this distinction stems from the reality that parturients with different youth at domestic are much less in all likelihood to be in a position to rest, and want to be in an upright position greater frequently.

In our study according to Diagnosis (%) the IIH, Optic Neuritis, Peripheral neuropathy, Demyelinating disease, SMA, Autoimmune encephalitis, CNS infection, Dementia and CVT were 59(49.16%), 3(2.5%), 11(9.16%), 38(31.66%), 4(3.33%), 1(0.83%), 1(0.83%), 2(1.66%) and 1(0.83%) respectfully.

Epidural blood patch stays the most high-quality treatment for PDPH [27]. Approximately half of all patients who developed a PDPH obtained one or extra EBP. We discovered that the severity of the headache and BMI had direct correlations to the variety of PDPH patients that elected for an EBP. The early onset of PDPH signs and symptoms (days zero or 1) seems to point out an extra extreme headache necessitating EBP, as 95.5% of patients that required greater than one blood patch developed signs on post neuraxial anesthesia placement days 0 or 1. Patients that had greater than one EBP had a decrease BMI than the

different groups, a finding that may additionally correlate with the decrease incidence of PDPH in patients with a BMI C 31.5 kgm-2. In addition, patients with a PDPH that had a vaginal delivery had been greater possibly to want greater than one EBP in contrast with Cesarean transport patients, which may also point out that pushing at some stage in a vaginal delivery may additionally aggravate signs of a PDPH. Nevertheless, we have been unable to achieve records on pushing due to the fact of the lack of digital medical records in the course of most of the study period. Other elements that make a contribution to this discovering can also consist of unwillingness to endure any other epidural technique for EBP, availability of assist from household or friends upon discharge, and a strong wish to return home. Symptoms of a PDPH can be debilitating, limiting purposeful popularity in the immediate postpartum period, and might also enlarge the health center size of stay. Post-dural puncture headache led to a lengthen in health facility discharge in 19 patients, [28] of which obtained a least one EBP. Our discovering that PDPH following neuraxial anesthesia contributes to an elevated medical institution size of remain is in settlement with Orbach-Zinger *et al.,* and Angle *et al.,* [29, 30] The truth that 77% of the PDPH patients who wanted extra than one EBP skilled a prolong in sanatorium discharge is no longer surprising, in view that most anesthesiologists will wait at least 24 hr for enchancment of signs after the first EBP earlier than performing a second EBP. Even though a delayed hospital discharge due to a PDPH will increase medical costs and inconvenience to the parturient and her family, the efficacy of EBPs in the prevention of PDPH following ADP has no longer been determined [31].

In this study according to estimated rate of spontaneous recovery from post-dural puncture headache. According to duration the 1-2, 3-4, 5-7, 8-14, 3-6 weeks, 3-6 months and 7-12 months were 40(33.33%), 36(30.0%), 22(18.33%), 10(8.33%), 6(5.0%), 2(1.6%) and 4(3.33%) respectfully.

An obstacle of this study is about consists of its retrospective and single center design. Another challenge is the lack of demographic information on all the randomize who obtained a neuraxial anesthetic at some stage in the ten-year period, which limits our potential to perceive precise hazard elements for ADP. The lack of data in our information set on the use of intrathecal or epidural opioids and the percentage of Cesarean deliveries that had a spinal anesthetic is every other predicament in our evaluation of danger elements for PDPH. Electronic medical records have been now not wholly applied in our labour and delivery unit till the give up of our period. Therefore, we have been unable to attain data on the length of second-stage pushing, and the degree of cervical dilation prior to neuraxial placement in labouring patients.

The demonstrated advantages of neuraxial anesthesia, such as superior pain manipulate for the duration of labour, lowered threat in growing postpartum depression, [32] and higher patient satisfaction, outweigh the low (1.0%) hazard of creating a PDPH. Obese patients (BMI C 31.5 kgm-2) and primigravida patients who had an ADP have been much less probable to improve a PDPH. Epidural blood patch stays the most fantastic treatment for PDPH, with about 50% of patients who developed a PDPH requiring one or extra EBP. We endorse that obstetric patient with a diagnosed ADP who increase early onset and extreme signs and symptoms of PDPH be provided an EBP as early as possible. Lastly, the 0.06% threat of delayed health facility discharge due to a PDPH is extraordinarily low when in contrast with the complete quantity of patients who acquired neuraxial anesthesia for labour besides issues.

CONCLUSION

Therefore, we concluded that in the current study about obstetric population had greater incidence of PDPH in assessment to obstetric population. PDPH was once related with accelerated wide variety of attempts; kinds of method used, and begin of ambulation. Moreover, the incidence of PDPH used to be extra in female, youthful age as in contrast to male and aged patients.

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