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Effect of pillows and mobilisation in the development of post-dural-puncture headaches: a comparative study

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ABSTRACT

Background: Post dural puncture headache (PDPH) is a complication of spinal anaesthesia. It usually develops in the first 3 post-op days. It is a common belief in the doctors of India that use of a pillow in the post-op period or allowing the patient to stand leads to the development of PDPH. Since post-op management is the job of surgical resident in India, this study has come in our domain. **Objectives:** Our aim is to disprove this myth. Not only is the barring of pillow useless in the prevention of PDPH, it is also a cause of great discomfort for the already uncomfortable post-op patient. **Materials and Methods:** Our study compares 65 post-op patients who were divided into 4 groups, one didn't use pillows, other used pillows, another was mobilised, and the general/local anaesthesia group was kept as a control. **Results and Conclusion:** Our study found no association between the barring of pillows and prevention of PDPH. However we found association of pillow barring and development of back and neck problems. The results were best in the group that was fully mobilised.

Keywords: Post-Dural Puncture Headache, Spinal headache, Pillow, Mobilisation.

Introduction

Spinal Anaesthesia is often used in orthopaedic surgeries of the lower limbs. Spinal anaesthesia is considered to be safer and easier than general anaesthesia. One of the main concerns in post-operative recovery in patients who have received spinal anaesthesia is Post-dural-puncture headache (PDPH). And because in countries like India, post-operative recovery is the responsibility of orthopaedic resident, this study has come in our domain. It is a general notion among anaesthetists as well as other doctors that bed rest without even a pillow can protect against the development of PDPH. However such a notion though prevalent has not been supported by any scientific literature and there are many studies that discard this view. [1]. On the other hand, postural restrictions have problems of its own. Like problem in feeding, urinating, defecating, head, cervical, shoulder and back ache. Indeed postural restriction is even used today by many developed and underdeveloped countries as a means of torture. Our study was undertaken to see if there is any difference in the incidence of PDPH and/or patient comfort in patients who have received spinal anaesthesia, who had been barred from using a pillow, who used a pillow and who were mobilised and we will use the patients who received general anaesthesia as controls. PDPH is a complication of puncture of the dura mater (as in spinal anaesthesia or diagnostic lumbar puncture or accidental dural puncture in epidural anaesthesia). According to the Headache Classification Committee of the International Headache Society, PDPH is defined as "bilateral headaches that develop within 7 days after a lumbar puncture and disappears within 14 days. The headache worsens within 15 min of resuming the upright position, disappears or improves within 30 min of resuming the recumbent position". [2]Leakage of cerebrospinal fluid through the puncture in dura reduces fluid levels in the brain and spinal cord, and may lead to the development of PDPH [3, 4]. There are two possible explanations. First, the lowering of CSF pressure causes traction on the intracranial structures in the upright position. These structures are pain sensitive, leading to the characteristic headache. Secondly, the loss of CSF produces a compensatory venodilatation via the Monro–Kellie doctrine. [5] PDPH usually occurs hours or days after the procedure. Onset occurs within two days in 66% cases and within three days in 90% of PDPH cases. [3]The headache is severe and described as "searing and spreading like hot metal," involving the back and front of the head, and spreading to the neck

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and shoulders, sometimes involving neck stiffness. It is exacerbated by movement, and sitting or standing, and relieved to some degree by lying down. Nausea, vomiting, pain in arms and legs, hearing loss, tinnitus, vertigo, dizziness and paraesthesia of the scalp are common.[3]The history of accidental or deliberate dural puncture and symptoms of a postural headache, neck ache and the presence of neurological signs, usually guide the diagnosis. The incidence of PDPH has reduced from 66% in 1898 [4] to 11% in 1956, due to the introduction of 22G and 24G needles, [6] and the incidence has further decreased to less than 4% with the introduction of atraumatic needles. [7] 72% of headaches resolved within 7 days, and 87% had resolved in 6 months. [6]

Treatment: Patient should be encouraged to lie in a comfortable position. There is no clinical evidence to support the maintenance of the supine position before or after the onset of the headache as a means of treatment.[8]Supportive therapy such as rehydration, acetaminophen, non-steroidal anti-inflammatory drugs, opioids, and antiemetic may control the symptoms. In unresponsive patients Epidural blood patch can be used, and as a last resort surgical closure is used.

Materials and Methods

Patients older than 7 years who are operated in our hospital will be taken as subjects in our study. Patients younger than 7 years and patients who are not fully oriented or whose mother tongue is not urdu or Kashmiri will be excluded because of inability to answer questions properly and reliably. Patients will receive either spinal or general anaesthesia as per the anaesthetist's judgment. The operated patients will be divided into 4 groups.

First group will be kept in bed, and will not be allowed to use a pillow.

Second group will be allowed to use a pillow and to turn as comfortable.

Those patients who are operated below the knee will be included in the third group, they will be allowed to use a pillow, turn in bed, sit and use crutches to walk.

The forth group will include the patients who have received general anaesthesia, they will be used as control. The patients will be followed for first 3 post-op days and on the 7th post-op day and will be observed for the development of headache, neck stiffness, and migraine like symptoms. In patients with headache, severity and relation of posture will be noted. Those patients who are discharged will be called and questioned. Those patients with at least 3 days of follow-up will be considered in the study while those with 1 or 2 days of follow-up with be considered "loss of follow-up"

Result

For each cell, e.g,

4 (25) or 14 (GA)

H(a/p), B H(b/n), N, S

4 represents: Patient No. (**25 represents:** Gauge of spinal needle/ Gen. anaes/Local anaes)

H: Headache in patient (**a:** Mild, **b:** Mod, **c:** Severe/**p:** postural association, **n:** no association),

B: backache, **N:** neck pain,

	SPINAL ANAESTHESIA			Gen/Local Anaesthesia	Loss of Follow-up	Death
	Without Pillow	Used Pillow	Patient Mobilised	Control group		
1	4 (25) H(a/n)	3 (25)	6 (23) B	5 (GA) N	1 (23) witoutpil H(a/n), B, N	36 (25)
2	8 (25)	7 (25)	13 (25)	11 (LA) H(a/n)	2 (GA)	
3	19 (25)	9 (23) H(b/n)	15 (25)	12 (GA)	10 (GA)	
4	20 (25) B, N	22 (25) B	27 (25) H(a/n)	14 (GA) H(b/n), N	21 (23) Mobilise B	
5	28 (25) B	25 (25) H(a/n)	40 (25) B	16 (GA) N	23 (25)	
6	29 (25)	26 (25)	41 (25) B	17 (GA)	31 (GA)	
7	30 (23)	42 (25)	46 (25)	18 (GA)	34 (23)	

	H(a/n), B	B,	H(a/p)	B, N,	
8	32 (25) H(b/n)	44 (25)	48 (25)	24 (GA)	38 (25)
9	33 (25) H(c/p)	45 (23) H(a/n), B,		47 (GA) B,	39 (26) H(a/n)
10	35 (23) H(a/n), B			49 (GA) H(b/n), B, N	43 (25) B
11	37 (23)			54 (GA)	50 (26) Pillow
12	51 (23) B			56 (GA)	52 (GA) B
13	53 (23)			58 (LA) H(a/n), B	61 (GA) H(a/n)
14	55 (23) B			62 (LA) H(b/n), B, N	
15	57 (23) B			63 (GA) B	
16	59 (25)			64 (GA)	
17	60 (25) B			65 (GA) B	

For the study we included 65 patients. 43 received spinal anaesthesia while 22 received general or local anaesthesia. 18 patients developed headache, 12 had mild (66%), 5 had moderate (28%) and 1 had severe headache (6%). Only 2 patients with headache had postural association of headache, 1 in the group that didn't use pillows who had severe headache, and 1 in mobilised group who had mild headache.

Out of the 43 spinal patients, 8 were lost in follow-up, 1 patient expired. Out of the rest: 17 were kept without pillow in the post-op period. 5 developed headache. (30%).9 used pillow in the post-op period, 3 developed headache. (30%) while 8 were mobilised in the post-op period, 2 developed headache (25%).17 patients received general or local anaesthesia, out of them 5 developed head ache. (30%).17 who were kept without pillow, out of them 8 developed backache (50%), 1 developed neckache (6%).9 who used pillow, out of them 3 developed backache (30%), 0 developed neckache (0%).8 who were mobilised, out of them 3 developed backache (35%), 0 developed neckache (0%).17 patients who received general or local anaesthesia, out of them 7 developed backache (40%), 6 developed neckache (35%).14 patients received spinal anaesthesia with a 23 G needle. 5 developed headache (35%).29 patients received spinal anaesthesia with a 25 G needle. 6 developed headache (20%).3 patients received spinal anaesthesia with a 26 G.

Discussion

Headache is a common problem in post-operative period. In our study headache developed in 18 out of 65 patients (28%). Out of them 66% had mild, 28% had moderate and 6% had severe headache. The only patient with severe headache also had postural association of headache. Although headache is common in post-op period, spinal headache or PDPH was uncommon, headache associated with postural symptoms was only seen in 2 patients (3%). 1 in the group that didn't use pillows who had severe headache, and 1 in mobilised Group who had mild headache.Head ache was almost same in frequency in all 4 groups, around 30%, however it was marginally low in patients who were mobilised in the post-op period (25%). And mobilised patients seemed to have only milder symptoms as compared to other groups. However larger study groups are needed to increase the confidence of this observation. Backache was also a common complaint in the post-op period (30-50%), with highest occurrence in the group that didn't use pillows in post-op period. Neck ache was seen in 0-35% patients, lowest in the group that used pillows or were mobilised and highest in the group that had received general anaesthesia.The gauge of needle used for dural puncture also seemed to have a relationship to the development of headache in post-op period. 35 % of the patients in whom large bore 23 G needle was used developed headache, while only 20 % of the patients in who smaller 25 G needle was used developed headache.

Conclusion

Headache is a common problem in the post-op period and most are only mild. But it must be remembered that not all headaches are PDPH, which are very uncommon. Headaches are equally frequent in all patients whether they receive general anaesthesia or spinal anaesthesia. However mobilisation seemed to have a positive effect in the prevention of headaches. Although PDPH are relieved by lying flat without even a pillow, and most patients learn this fact by themselves, but there is no definite role of lying flat in post-op period in the prevention of headache according to literature. It is a common notion among the anaesthetists as well as other doctors in India that using a pillow in the post-op period increases the development of PDPH, but there is no evidence to support the same. On the other hand, postural restriction and the barring of pillows and mobilisation cause various significant problems in the patients like backache, neck pains, shoulder pains (which might be nagging and extremely irritating), urinary retention, feeding problems, insomnia etc.It is our recommendation to mobilise the patients as much as possible in the immediate post-op and to return them to as normal routine as possible as soon as possible, in order to minimize their discomfort. Practices lacking scientific proof especially those that cause patient discomf ort, should be avoided.

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Conflict of Interest: None

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