

Incidence of Post Dural Puncture Headache (PDPH) in Comparison with 23, 25 and 27G Needles In Relation to Age

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ABSTRACT

Aim: To assess the incidence of PDPH in different gauges of spinal needle in relation to age.

Methods: This Comparative Study was carried out at AFIU (RWP), Railway General Hospital Rawalpindi and Children Complex Multan from August 2007 to August 2008. A total of 1500 patients were studied in 9 different groups (A1, B1, C1, A2, B2, C2, A3, B3, C3) with group A, B and C for 23G, 25G and 27G respectively and 1, 2 and 3 for 26-40yrs, 41-55yrs, and 56-70yrs respectively. A1 included younger age group with 23G spinal needle and C3 included older age group with 27 G spinal needle. ASA II/III grade patients were selected. All groups were preloaded with 10ml/kg body weight ringers lactate. Routine urine examination and blood complete picture were done. 24 hrs strict post-operative bed rest observed.

Results: The frequency of PDPH in A1 (6%), B1 (3%), C1 (2%), A2 (3%), B2 (1.33%), C2 (0%), A3 (0%), B3 (0%), C3 (0%).

Conclusion: The study clearly shows that incidence is much higher in younger age group even with the finest needle of 27 gauge.

Keywords: PDPH (post dural puncture headache), Spinal needle gauge.

INTRODUCTION

Institute of Urology (RWP), Railway General Hospital (RWP) and Waseema Talat (PVT) Limited (MLT). Spinal anesthesia is one of the favorite regional anaesthesia preferred by anesthetists all over the world, but this modality comes with a distressing condition called PDPH, which puts the patient to a very disturbing and painful condition. Reduction in size of the dural hole by the use of a fine spinal needle significantly reduces the incidence of spinal headache¹.

Various studies have been made to notify and control the factors leading to PDPH. We kept the others factors constant and have stressed on gauge and age of the patient to conclude that how much difference of incidence of PDPH is seen by changing the gauge size and age of the patient.

MATERIALS AND METHODS

The study was carried out in Armed Forces Institute Of Urology (RWP), Railway General Hospital (RWP) and Waseema Talat (PVT) Limited (MLT) from 15th Aug 2007 to 14th Aug 2008. After taking permission from ethical committee. The response of 1500 patients was observed, sample was taken randomly and divided into sub groups according to gauge of

spinal needle and age, there were total of 9 groups A, B and C showing 23, 25 and 27 Gauge respectively, whereas 1, 2, and 3 indicates age bracket of 26-40years, 41-55years and 56-75years respectively A1, B1, C1, A2, B2, C2, A3, B3, C3. The occurrence of spinal headache through different gauges (i.e. 23, 25 and 27G) in similar age brackets has been observed and analyzed. Frequency, mean, and standard deviation of data have been recorded through SPSS-12 software. All the cases were elective ASA II/III, preloading of Ringer-Lactate 10ml per kg, had Complete Blood Picture and Urine Routine Examination, full aseptic measures were taken.

RESULTS

Statistical analysis of data has been done in which frequency in percentage, mean and standard deviation is calculated and then interpreted. The minimum value of analysis is "1" which shows the presence of spinal headache whereas the maximum value is "2" which shows no spinal headache. The results are shown according to age brackets with all the three gauges of spinal needle were applied.

The results in table 1 clearly depicts that occurrence of spinal headache in C1 (gauge 27 and age 26-40yrs) is minimum as it shows a mean of 1.98 and standard deviation of 0.140, whereas B1 and A1 show means of 1.96 and 1.94 with standard deviation of 0.196 and 0.238 respectively. According to figure 2 and 3 it is clear that C1 shows the least incidence of

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spinal headache as it has the frequency of 2% where as B1 and A1 have 3% and 6% respectively. Table 1 shows that C2, B2 and A2 needles have mean of 2.00, 1.97,1.93 and standard deviation of 0.00, 0.115, 0.161 respectively. Therefore it is clear that C2 has no incidence of spinal headache as it has the maximum mean i-e 2 and least standard deviation that is 0.00.

Figure 2 and 3 show that the frequency of spinal headache occurring in C2 is zero where as in B2 and C2 is 1.33% and 3% respectively.

All the three gauges A3,B3 and C3 show similar results in figure 1, 2 and 3. Mean is 2, which shows that spinal headache did not occur in any of the gauge spinal needle whereas frequency is zero, which again shows the absence of spinal headache in all the three gauges.

Table-1: Different gauge similar age

Gauge/age	n	Mean	SD
23/26-40	100	1.9400	.23868
25/26-40	100	1.9600	.10695
27/26-40	100	1.9800	.14071
23/41-55	150	1.9733	.16165
25/41-55	150	1.9867	.11508
27/41-55	150	2.0000	.00000
23/56-70	250	2.0000	.00000
25/56-70	250	2.0000	.00000
27/56-70	250	2.0000	.00000
Valid (list wise)	100		

Fig. 1

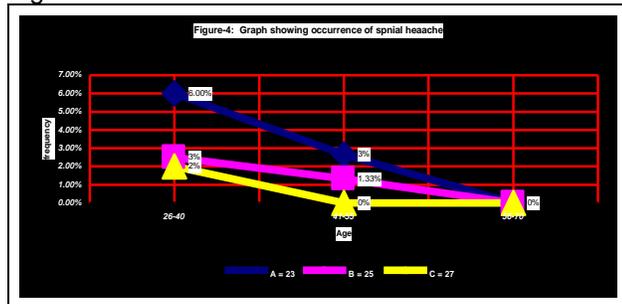


Fig. 2

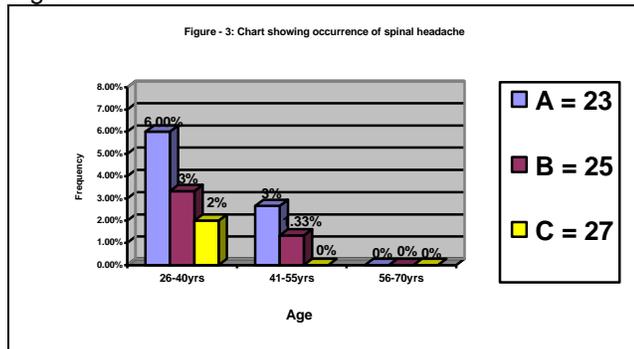
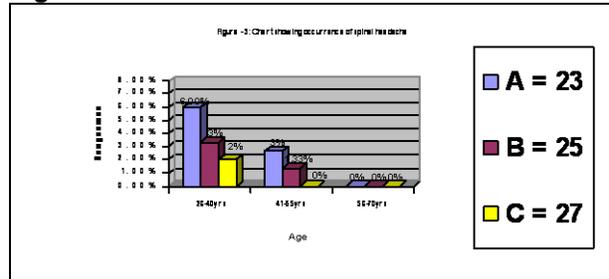


Fig. 3



DISCUSSIONS

The International headache society has defined a PDPH as a “bilateral headache that develops within 7 days and disappears within 14 days after the dural puncture. The headache worsens within 15mins of assuming an upright position and improves within 30 minutes of resuming the recumbent position”².

PDPH occurs because of the loss of cerebrospinal fluid, which is lost from the dural tear into the epidural space. Headache is generally located in frontal and occipital area but may also include the back of neck and upper shoulders^{3,4}. Many Anesthesiologists believe that PDPH is caused by traction on pain sensitive structures within the cranial cavity. But there is no disposition of intra cranial structures, which suggests that the traction theory does not completely explain the etiology of the PDPH. One more hypothesis, which explains PDPH, is cerebral venous dilatation⁵.

Signs and Symptoms include severe dull or throbbing pain in Frontal and Occipital region or are diffuse in nature. It starts within 7 days of lumbar puncture, relieved by lying supine for 30 mins, aggravated by sitting, coughing or straining. Associated factors includes nausea, vomiting and neck stiffness^{6, 7}. Management of PDPH starts from bed rest, good hydration, caffeine benzoate (500mg in over 2 hours), and if headache is not relieved than gold standard therapy The Epidural Blood Patch is done (at least 48hrs after headache develops)⁸. One latest treatment modality of PDPH is the Bilateral Greater Occipital nerve block^{9,10,11}.

The cutting end needle has more incidence of PDPH then pencil point, but we keeping in mind the affording power of the patient and easy availability limited our study with cutting point. A cutting point introduced with bevel parallel to dura fiber is said to separate fibers rather than cutting as done when introduced perpendicular¹².

Age related incidence of PDPH could be multi factorial as seen in young age groups, which suffer more with PDPH than older age group. The incidence of PDPH was 28.5% in those under 40 yrs of age and 7.3% over 40 yrs¹⁴. Krueger, Stolting and Graf

(1951), in a study of spinal anesthesia, found that in a group of "673 patients" there appears to be an inverse relationship between age and post spinal headache. The greatest incidence of spinal headache occurs in patient under 35yr of age¹⁵. One of the reason could be mobility of patient since younger patient starts early ambulation (good in surgeons point of view) causes high risk of PDPH since rapid fall in ICP occurs, other than this patient considering him/herself recovered become casual in following the advise set by anesthetist but the elderly patient are already less active therefore chances of PDPH are rare in them.

CONCLUSION

The study clearly shows at incidence is much higher in younger age group even with the finest needle of 27 gauge.

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