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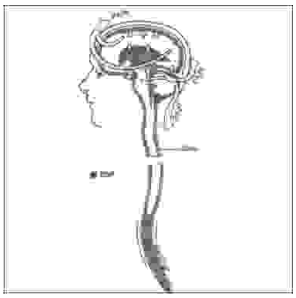

POST SPINAL HEADACHE;

COMPARING NEEDLES OF 25 AND 27 GAUGES FOR INCIDENCE OF POST SPINAL HEADACHE.

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ABSTRACT... Objective: The main objective of the study was to give emphasis for use of smaller caliber spinal needles with the bevel placed sagitally to get the best results and reduce the incidence of PDPH in the patients getting spinal anesthesia. **Design:** The study on PDPH was conducted as comparative and prospective. Study comparing the two different spinal needles of 25 G and 27 G (different calibers for incidence of Post dural puncture headache). **Place of study:** This study was conducted in Anaesthesiology department CMH Lahore.. **Patients and methods:** For this study the literature from different books/magazines/ journals and internet was consulted to make the study comparable. The study design contained the patients selection through randomization technique. Proper criteria for selection of the patients were opted and in it only A.S.A.1 Patients were studied. Similarly certain specific age group (young patients) were kept for this study to get accurate results, proper caparison and patients and already got spinal anaesthesia were not tested too. Quincke Babcock spinal needles of 25G and 27G were easily available in the market. This clinical trial contained eighty patients divided in two groups. After taking all precautionary measures they were given spinal anaesthesia and after it they were observed for spinal headache (study performa annexed). Epidural blood patches were also given in those patients who were given spinal anaesthesia with 25G needle, where required. **Conclusion:** The results of the study were tested by use of Chi's square test with 1˚ of freedom. The results confirmed the hypothesis that smaller caliber needle (27G) caused no PDPH while bigger caliber needle (25G) caused headache in percentage of patients. In the end the references from the concerned literature were cited and results were found comparable as given in the literature. The role of smaller caliber needles was well evaluated in this study.

Key words: 1.Spinal Anaesthesia 2. Epidural blood patch 3. Post-dural puncture headache.

INTRODUCTION

Post dural puncture headache (PDPH) is a very common problem after spinal anaesthesia. Interest and debate concerning its occurrence and treatment can regularly be generated among anesthesiologists and many of the lively discussions over the past century sound quite like those of today. Debates over deeply held convictions concerning the causes, types of needles over- shadowed the fact that there is much on, which there is agreement. It is often overlooked the considerable literature documenting wide variations in the mode of treatment.

It is seen that most of the times anaesthesiologists use to avoid by giving invasive therapeutic treatment, like epidural blood patch and keeps the patients on conservative treatment for a long durations unnecessarily and if they give the invasive therapeutic treatment they hardly reattempt if the symptoms of the patient still persists[1].

It is also important to mention that patients may vary in their symptoms even if one patient (having PDPH) is given the best treatment than the other[2]. It signifies the patient's psyche[3].

Similarly type of diseases and surgery also effect on the rate of occurrence of PDPH, like more incidence is with c-section[4].

However during this study every aspect of the patient is kept under observation to achieve the best results e.g. patient's psyche etc.

AIM AND OBJECTIVE

This comparative study was conducted to establish the fact that spinal needles having smaller calibers cause headache in less number of patients than the needles of bigger calibers. The main emphasis of the study is promotion of smaller caliber needles as far as it is possible. It also gives less trauma and less incidence of post spinal headache.

MATERIALS AND METHODS

The comparative study between two needles of Quincke Babcock of 25G and 27 G was conducted in Combined Military Hospital Lahore Cant.

SUBJECT

This study was conducted on 80 patients those were planned for elective lower abdominal surgery like haemmorhoidectomy, varicocele, herniorraphy, C-section, varicose veins or surgery on the lower limbs. Both male and female patients were selected.

TYPES OF SPINAL NEEDLES

Following two types of the needles were used.
Quincke Babcock of 25 G
Quincke Babcock of 27 G

These needles are of standard beveled type.
These needles are preferred over the Greene needle (pencil tipped) because those were very costly and the objective can be achieved through the aforementioned needles by using their beveled sagittaly.

SAMPLE SIZE

The clinical trial was with 80% power and at the significance level of 0.05% and hoping a difference about 30% less post spinal headache with 27G (Smaller caliber needle). We selected total eighty patients.

DIVISION OF SAMPLE

Total 80 patients were selected and divided in group "A" and "B" by randomization technique using random number table keeping 40 patients in each group.

INCLUSION CRITERIA

The Patients selected for this study were of following Categories: -
Ages 20 – 40 Years
Both male and female
Physical status was ASA – I

EXCLUSION CRITERIA

Patients having any chronic illness e.g. ischemic heart

disease, diabetes mellitus, bronchial asthma, bronchitis, sinusitis or having migraine, or hypertension.
Previously operated under spinal anaesthesia.
Ages below 20 or above 40 Years.
Patients having Physical status other than ASA – I
Patients having any spinal deformity.

PROCEDURE / METHODS

The duration of study was May 2004 to June 2005.
For this only elective cases were selected. These cases were admitted a day or two earlier before surgery. A day earlier these patients were inquired regarding any illness other than the surgical problem. Similarly their ASA status was also confirmed and only those patients were tested having ASA-I status and fulfilled the inclusion criteria.

Necessary investigations were ordered. Patient was clinically examined and findings were documented in patient's history sheet under the heading of Pre-anaesthetic check up. Patient's consent regarding spinal anaesthesia was taken.

On the day of surgery, the above-mentioned patients were taken to the operation theatre and wide bore cannula of 18 G were passed in upper limb. Patients were given 1000 ml of crystalloid fluid as a pre-hydration therapy to prevent the rapid fall in B.P due to sympathetic blockage.

The patients were made to sit on the OT table and lumber puncture was done with 25G and 27G spinal needles at the level of L4-5 with the bevel placed sagittally on each of them. 2ml .75mg% Bupivacaine (generically Abocaine Spinal .75%) hyperbaric was given and then allowed the patient to lie down on the table with slightly raised head end and after 7-10 minutes patient was allowed to be operated by the surgeon, after confirming sensory and motor blocked. Then at the end of the surgery patient was sent in the ward and there observed for any post-spinal headache for 48 hours or as soon as they became ambulatory. Patients were given a Performa Anx "A" to fill after 48 hours and then patient's complaints and treatment if any, were documented.

DATA ANALYSIS

Proportions were presented in the form of percentages and whatever proportions came they were tested by applying Chia's square test with 1˚ of freedom.

RESULTS

This comparative study between the spinal needles of 25G and 27G as cause of Post-spinal headache was conducted in Anesthesiology Department of Combined Military Hospital Lahore Cantt, from May 2004to June 2005.In this regard total eighty patients were selected and they were divided equally in two groups "A" and "B" respectively. Each group contained total forty patients.

Group A Patients were given spinal anaesthesia with 25G needle and group "B" patients were given spinal anaesthesia with 27G needle.

Table-I. Group Division

Group	No of pts	%age
Group A Spinal needle 25G	40	50%
Group B Spinal needle 27G	40	50%
Total	80	100%

Table-II. Age distribution

Age	No of pts	%age
25-30 years	70	87.5%
30-35 years	06	75%
35-40 years	04	05%

Among the all 70 out of eighty patients (87.5 %) were less than 30 years of age. Between 30 – 35 years were six (7%) and 35 to 40 years were only four patients i.e. (5%). Among female in both the group no of patients of C-section kept equal.

Table-III. Sex Distribution		
Sex	**Group A**	**Group B**
Male	20(25%)	20(25%)
Female	20(25%)	20(25%)
Total	40 (50%)	40 (50%)

Table-IV. Type of surgery in female pts	
Group A	**Group B**
C Section 10 (25%)	10(25%)
other 10 (25%)	10(25%)
Total 20 (50%)	20 (50%)

Among both the groups patients those complained post dural puncture headache were –

Table-V. Post dural puncture headache	
Group A	**Group B**
2 = 5% (PDPH)	0 = 00 % (PDPH)
38 = 95% (normal)	40 = 100% (Normal)

Male to female ratio regarding post dural puncture headache is given below

Table-VI. PDPH in sex distribution	
Group A	**Group B**
Male = 0%	0
Female 5% (C-section)	0 = 00%

Above given are the results in the form of percentages.

DISCUSSION

Before establishing the conclusion of the study let us take detail discussion of the subject, which is one of the complications of spinal anaesthesia.

Spinal headache is related to the persistence of the dural puncture, which gives rise to the leakage of the cerebrospinal fluid into the surrounding soft tissues. Leaking C.S.F leads to chronic lowering of the cerebrospinal fluid pressure. This exerts downward traction on the structure of central nervous system and on blood vessels that are attached to the discs and cranium as well as the brain stem. Thus lead to the headache similar to the acute vascular cluster headache[5].

Thus headache is basically clusteric in nature i.e. acute vascular cluster headache. It is postural in nature, typically when patient sits or stands from lying position it becomes very agonizing and distressing[6]. Post-spinal puncture headache usually appears twelve hours after the number puncture and worsen in upright position other characteristics are throbbing frontal quality association with nausea and vomiting and prompt relief upon resumption of supine position.

It may be that spinal headache typically occurs 8-12 hours post-operatively because this is the time when patient first sits or stands up.

A few other factors those were taken into account in our study were thought to be additional factors in the incidence of post spinal headache. These factors are given: -

It is also important to keep the orientation of the bevel of the spinal needle also effect, the post spinal headache. The fibers of the dura are arranged in a longitudinal manner and if spinal needle enter the dura with the bevel parallel to the fibers, it is thought to separate rather transect them[7].

There are needles which are developed to minimize this affect of the bevel like Greene and Whitacare, Pencil point needles, but they were not included in this study being expensive and not commonly available. Similarly in this study the age and sex of the patient were also kept in mind as shown in the percentages before. Male

and older age patients had less incidence of post-spinal headache[8]. In contrast it was high in pregnancy. That ratio is high due to increase in intra-abdominal pressure, which tends to increase in cerebrospinal pressure and in return leakage from the dural rent is high.

In this study we tried the treatment of the post-spinal cephalgia both conservative and absolute. It was seen that in first twenty four hours they were given aggressive hydration, soft diets to avoid constipation, stool softener, abdominal binder and oral analgesics and male patient responded well but the female patients under gone cesarean-section responded very poorly to this conservative treatment.

The patients those headaches persisted after doing all above measures were offered the epidural blood patch. In this procedure epidural needle (Toughy needle of 18 G) was placed in the interspace below the previous lumber puncture was performed. Fifteen ml of the patient's blood was obtained and injected in the epidural space.

In this study almost patient relieved 100% with this treatment modality and they did not require second epidural blood patch. In the same study other post spinal complications were also brought under discussion like urinary retention, which was found in two male patients. It was due to blockade of S2-4 associated with loss of bladder tone and inhibition of voiding reflex. No case of meningitis of septic or infectious seen in this study.

Similarly no case of any nerve injury was seen nor a single case of total spinal anaesthesia or profound hypotension recorded

Similarly no case of profound bradycardia and respiratory insufficiency was seen which was again secondary to high spinal anaesthesia if hypotention persisted, it would have caused the hypo-perfusion of the medullarly respiratory center and would lead to apnea and this is the most common presentation of high anaesthesia. Comparing the results and technique of above study it is seen that Mihic's investigations of bevel "direction" also pr-oved significant[9]. Although needle type was unspecified in Mihic's report, it was likely a Quinke's type needle, and this clinical observation has been supported by Ready and Colleagues[10]. Laboratory investigation showing simulated dural puncture by cone shaped spinal needle tips produce a slower transdural loss of fluid than similar puncture with cutting tipped needles. But in our study we did not use cone shaped spinal needle.

Similarly it was seen that early ambulation could not affect much on the incidence of post puncture dural headache. It was also seen that epidural blood patch proved `to be effective treatment. Gromely introduced this therapy and told that it is 90% effective in relieving headache per dural patch[11]. In this study it proved 100% effective. We have given epidural blood patch more on cauded site.

Szeinfeld and co-workers have shown radio- nucleotide label red blood cells injected epidurally, approx 15 ml of blood provides efficacy and allows spread a mean distance of nine spinal segments. It proved that blood spread over more segments in cephalad direction[12]

Data from Brown and Elman demonstrated that approximately 25% of all our surgical patients undergoing anaesthesia regardless of anaesthesia technique, experiences backache[13]. In this study we got only 10% cases of backache. This study also showed an extremely safe anaesthesia technique. Caplan et al identified 14 cases of sudden cardiac arrest receiving spinal anaesthesia

This discussion may continue to bring new concepts in this field in the form of new treatments and techniques, but results may remain unchanged.

Annex 'A'
STUDY PROFORMA

Name: _____ S/O,D/O _____
Age:_____Sex_____Disease_____
Operation:_____A S A Status:_____

Type of Spinal Needle:

_____

Questions regarding headache :

1. Did you feel headache after the operation?
   Yes/No
   2. When did headache started?

a. Within 6 hours
   Yes/No

b. Within 12 hours
   Yes/No

c. Within 24 hours
   Yes/No

3. What is the nature of headache?

a. Dull
   Yes/No

b. Throbbing
   Yes/No

c. Cluster
   Yes/No

4. Does it aggravate in Upright position?
   Yes/No

5. Does supine position give relief?
   Yes/No
   1. What treatment did you get?
      a. Analgesics Yes/No
      b. Caffeine Yes/No
      c. Epidural blood patch Yes/No

Conclusion:

_____

CONCLUSION

Although the study revealed almost the same results as expected in other hypothesis that is the needle having wider caliber would have high incidence of post-dural puncture headache but during this study a few things were practically seen like the position of bevel of the needle, type of the patients and surgery as already discussed. Headache was more common among female coming for cesarean section. Similarly a few parameters and necessary precautions were also observed to reduce the incidence of post dural puncture headache and to achieve the best results. In this study it was also seen that the effective treatment to control the post spinal headache is epidural blood patch which not only controlled the headache but it never required its repetition and the patient recovered within minutes. It is seen that better results can be achieved with patient's co-operation and better technique as well. Because in this way multiple dural punctures can be avoided.

REFERENCES

1. DiGiovanni AJ, Dunbar BS: **Epidural injection of autologous blood for post-lumber puncture headache.** Anesth Analg 49:268, 2002.

2. Corbey MP, Bach AB, Lech K, Frørup AM. **Grading of severity of postdural puncture headache after 27-gauge Quincke and Whitacre needles.** Acta Anaesthesiol Scand 2001: 41: 779-784.

3. Horlocker TT: **Complications of spinal and epidural anesthesia.** Anesth Clin North Am 2003; 18:461.

4. Cesarini M, Torrielli R, Lahaye F, Mene M, Cabrio C. **Sprotte needle for intrathecal anaesthesia for Caesarean section: incidence of postdural puncture headache.** Anaesthesia 2003: 45: 656-658.

5. Flaatten H, Felthaus J, Larsen R, Bernhardsen S, Klausen H. **Postural post-dural puncture headache after spinal and epidural anaesthesia. A double blind study.** Acta Anaesthesiol Scand 2002: 42: 759-764.

6. Murphy D, McDonald A, Power C, Unwin A, MacSullivan R. **Measurement of pain: a comparison of the visual analogue with a nonvisual analogue scale.** Clin J Pain 1998: 3: 197-199.

7. Hogan QH: **Lumbar epidural anatomy: a new look by cryomicrotome section.** Anesthesiology 75:767, 1991.

8. Liu SS, McDonald SB; **Current issues in spinal anesthesia.** Anesthesiology 2003; 94:888.

9. Mihic DN: **Post spinal headache and relationship of needle bevel to longitudinal dural fibres.** Reg Anesth 10:76, 2002.

10. Ready LB, Cuplin S,Haschke RH, Nessly M: **Spinal needle determinants of rate of transdural fluid leak.** Anesth Analg 69:457, 2001.

11. Gormely JB: **Treatment of post-spinal headache.** Anesthesiology 21:565, 1960.

12. Szeinfeld M, Ihneidan IH, Moser MM, et al: **Epidural blood patch evaluation of the volume of spread of blood injected into the epidural space.** Anesthesiology 64:820, 1995.

13. Brown EM, Elman DS: **Postoperative backache.** Anesth Analg 40:683, 2002.

THE MOST DIFFICULT THING TO DO IS; TO MAKE FRIENDS, FEW CAN DO IT.

Shuja Tahir