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Wipe Out Period of Spinal Anaesthesia in Patients of Hemorrhoidectomy in relation to *Prakriti*

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ABSTRACT

Background: Surgical hemorrhoidectomy is most effective treatment for hemorrhoids. This procedure is commonly undertaken under spinal anaesthesia which produces intense sensory and motor blockade. In Clinical Practice of Anaesthesia, it is always seen that patients behave in a different manner even after the fact that they all are induced with similar anaesthetic agents with similar techniques of anaesthesia and maintained by similar anaesthetic agents. The difference in their behaviour is related to their physical, physiological and psychological status & to evaluate this difference, present research work was done. The patients were posted for hemorrhoidectomy under LSAB injection Bupivacaine 0.5% as 12.5 mg (2.5ml) dose. Wipe out period checked after waning the effect of anaesthesia and onset of pain. **Objectives:** To evaluate the wipe out period of spinal anaesthesia and studying its relation to different *Doshaja Prakriti* means how metabolism of the drug Bupivacaine is affected by specific *Doshaja Prakriti* of the human body. **Materials and Methods:** Clinical study has been accomplished by dividing patients in three groups i.e., Group I, Group II and Group III. Sample size - Total 60 patients. Intervention - Group I - Vata Pradhan, Group II - Pitta Pradhan, Group III - Kapha Pradhan. **Results:** Wipe out period of spinal anaesthesia is ~3-4 hrs in 85% patients belonged to Group I and ~4-5 hrs in 90% patients belonged to Group II while ~5-6 hrs in 70% patients belonged to Group III. Thus, it is concluded that wipe out period of spinal anaesthesia of *Vataj Prakriti* is less than *Pittaj* and *Kaphaj Prakriti*. The intergroup difference was statistically highly significant at $p < 0.001$. **Conclusion:** The descriptions in Ayurveda indicates that individuals with *Vata & Pitta Prakriti* are fast metabolizers while those of *Kaphaj Prakriti* are slow metabolizers, which may be comprehended to the extent.

Key words: *Prakriti, Hemorrhoidectomy, Spinal Anaesthesia*

INTRODUCTION

Every human being is unique and different from other in some respects. In spite of the differences in physical characteristics and psychic behaviours, human beings

can be grouped according to certain characteristics. These natural differences among human beings is termed as *Prakriti*. The term *Prakriti* has been interpreted in Ayurveda as *Svabhavam* which has different meanings viz. inherent property, temperament, constitution etc. *Prakriti*, comprises of three *Doshas* is well described in *Ayurvedic* literature, which is determined during the fertilization of *Shukra* and *Shonita*. This cannot change throughout life. So, this is the genetic component of human being. According to Modern Science, *Hemorrhoids* are abnormal dilatation or varicosities of Haemorrhoidal veins of anal canal. Animals do not suffer from *Haemorrhoids*, probably owing to their horizontal posture and thus, effective drainage of venous blood. It is mainly a disease of mankind especially among adults, with increasing frequency in advancing age. In

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Ayurvedic contexts, Hemorrhoids come under the concept of Arshas. In Ayurvedic Samhitas, the disease Arsha comes under the heading of Maharoga (Su.Su.34/4). Arsha is also included in Ashta - Mahagada (Su.Sa). Arsha occurs in Gudabhaga, which is undoubtedly a Marma and it is well known for its chronicity and difficulty to treat. In Ayurveda, it is defined as "Arivat Pranam Shrinotihinasti Iti Arshah". A disease which tortures patient's vital force (Prana) as enemy is called as Arsha. In Sushrut Samhita, four principal therapeutic measures are described in management of Arsha i.e., Bhesaja Chikitsa, Kshara Karma, Agni Karma and Shastra Karma. Among these, the parasurgical procedures like Kshara Karma, Kshara Sootra and Agni Karma are very safe & have minimal or no complications. Great Indian Surgeon, Sushruta described about the use of Kshara for cure of anorectal diseases. Further Acharya Chakrapani Datta (10-11 century A.D.) and Acharya Bhav Mishra (16-18 century A.D.), have described in their classical Ayurvedic texts, about the method of preparation of Kshara Sootra. Kshara Sootra acts by "Herbal Chemical Cauterisation" and removes the disease from the body. Spinal anaesthesia is a form of neuraxial regional anaesthesia involving the injection of local anaesthetic solution into the subarachnoid space in L3-L4 or L4-L5 interspace through a fine needle usually 9 cm long. So, in this study, an attempt had been made to find out how the patients belonging to Doshaj Prakriti viz., Vatapradhan Prakriti, Pitta Pradhan Prakriti and Kaphapradhan Prakriti as described in Ayurvedic literatures, respond clinically to spinal anaesthesia by evaluating the incidence of post-operative recovery period.

MATERIALS AND METHODS

Selection of patients

- Age group between 30 - 45 years of either sex irrespective of residential area.
- Patients are selected from the OPD/IPD of Shalya Tantra Dept. of R.G.G.P.G. Ayu. College & Hospital, Paprola (H.P.) 176115 who were posted for hemorrhoidectomy under spinal anaesthesia. Patients willing for trial and ready to give written and informed consent & falling under the ASA

Grade-I are included while who were receiving medication containing any analgesic and anticoagulant drug, mentally retarded patients & addicted patients such as drug abusers were excluded from this research work.

- Study design - Open, randomized and prospective.

Sample size - Total 60 patients.

Intervention

Group I - Vata Pradhan

Group II - Pitta Pradhan

Group III - Kapha Pradhan

Assessment criteria

Subjective criteria

VAS - Pain on 10-point visual analogue scale was evaluated by taking 0 for no pain and 10 for worst pain imaginable.

Objective criteria

- Pulse rate and respiratory rate** - These were measured during preoperative period and after waning the effect of spinal anesthesia and at onset of pain.
- Blood pressure** - This was measured same as pulse rate and respiratory rate. The fall or rise of blood pressure was recorded.

Assessment of patients

After waning of effect of anesthesia when patients complained of pain, they were assessed for different parameters viz. pain, pulse rate, respiratory rate and blood pressure.

OBSERVATIONS AND RESULTS

Inter Group Comparison of pulse rate over criteria of assessment (one way anova test)

Group	Mean Diff.	S.D±	F	P	Remarks
Gr. I Vs Gr. II	0.4	9.264	0.0298	0.864	NS
Gr. II Vs Gr. III	1.75	6.758	0.196	0.661	NS

Gr. III Vs Gr. I	1.35	8.262	0.336	0.565	NS
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The intergroup difference was insignificant at $p > 0.05$.

Inter Group comparison of Respiratory Rate

Group	Mean Diff.	S.D±	F	P	Remarks
Gr. I Vs Gr. II	0.85	1.65	2.336	0.135	NS
Gr. II Vs Gr. III	1.1	1.861	1.27	0.267	NS
Gr. III Vs Gr. I	0.25	1.654	0.0645	0.801	NS

The intergroup difference was insignificant at $p > 0.05$.

Inter Group comparison of Systolic Blood Pressure

Group	Mean Diff.	S.D±	F	P	Remarks
Gr. I Vs Gr. II	2.95	6.4	1.288	0.264	NS
Gr. II Vs Gr. III	1.95	10.321	0.495	0.486	NS
Gr. III Vs Gr. I	1	9.251	0.13	0.72	NS

The intergroup difference was insignificant at $p > 0.05$.

Inter Group comparison of Diastolic Blood Pressure

Group	Mean Diff.	S.D±	F	P	Remarks
Gr. I Vs Gr. II	2.4	5.964	1.586	0.216	NS
Gr. II Vs Gr. III	1.5	7.32	0.193	0.663	NS
Gr. III Vs Gr. I	3.9	7.016	2.862	0.099	NS

The intergroup difference was insignificant at $p > 0.05$.

Inter Group comparison of VAS (Visual Analog Scale)

Group	Mean Diff.	S.D±	F	P	Remarks
Gr. I Vs Gr. II	1.5	1.04	27.492	<0.001	HS
Gr. II Vs Gr. III	0.7	1.089	4.762	0.035	S

Gr. III Vs Gr. I	2.2	1.137	55.565	<0.001	HS
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The intergroup difference was statistically significant between Group II Vs Group III at $p < 0.05$ & was highly significant between Group I Vs Group II and Group III Vs Group I at $p < 0.001$.

Inter Group comparison of PORP (Post-Operative Recovery Period)

Group	Mean Diff.	S.D±	F	P	Remarks
Gr. I Vs Gr. II	1.1	0.553	48.4	<0.001	HS
Gr. II Vs Gr. III	1.3	0.441	89.194	<0.001	HS
Gr. III Vs Gr. I	2.4	0.429	235.35	<0.001	HS

The intergroup difference was statistically highly significant at $p < 0.001$.

Wipeout Period of Spinal Anaesthesia in all three Groups

Group	No. of Patients	Onset of Pain (Hrs)	Percentage
Group I (Vataja)	7	3	35
	5	3.5	25
	5	4	25
	3	4.5	15
Group II (Pittaja)	3	4	15
	8	4.5	40
	7	5	35
	2	5.5	10
Group III (Kaphaja)	1	5	5
	4	5.5	20
	9	6	45
	6	6.5	30

Discussion on clinical profile

Changes in Pulse rate: Intergroup comparison shows that mean difference between group I and group II was 0.40, group II and group III it was 1.75 and group III and group I it was 1.35. P value was >0.05 which was non-significant.

After waning the effect of Spinal anaesthesia and at onset of pain, there was increase in pulse rate in all the three groups which can be attributed by increase in sympathetic activity (reverse of sympathetic blockade). This increase in pulse rate is significant statistically.

Changes in Respiratory Rate: Intergroup comparison shows that mean difference between group I and group II was 0.85, group II and group III it was 1.10 and group III and group I it was 0.25. P value was >0.05 which was non-significant. The Respiratory rate of *Vata*, *Pitta* and *Kapha Pradhan prakriti* patients were evaluated in preoperative period and at onset of pain (after waning the effect of Spinal anaesthesia) and was found that the respiratory rate was significantly increased in all the three groups. This increase in respiratory rate is highly significant statistically.

Changes in Systolic Blood Pressure: Intergroup comparison shows that mean difference between group I and group II was 2.95, group II and group III it was 1.95 and group III and group I it was 1.00. P value was >0.05 which was non-significant. The systolic blood pressures of *Vata*, *Pitta* and *Kapha Pradhan Prakriti* patients were evaluated in preoperative period and at onset of pain (after waning the effect of Spinal anaesthesia) and was found that the systolic blood pressure was significantly increased in all the three groups. This increase in systolic B.P. was highly significant statistically. This increase in blood pressure at onset of pain could be due to sympathetic stimulation resulting from postoperative pain.

Changes in Diastolic Blood Pressure: The Diastolic blood pressure of *Vata*, *Pitta* and *Kapha Pradhan Prakriti* patients were evaluated in preoperative period and at onset of pain (after waning the effect of Spinal anaesthesia) and was found that the diastolic blood pressure was significantly increased in all the three groups. This increase in diastolic B.P. is highly

significant statistically. Intergroup shows that mean difference between group I and group II was 2.40, group II and group III it was 1.50 and group III and group I it was 3.90. P value was >0.05 which was non significant.

Changes in VAS: Intergroup comparison shows that mean difference between group I and group II was 1.50, group II and group III it was 0.70 and group III and group I it was 2.20. P value was <0.001 in Gp. I Vs Gp. II and Gp. III Vs Gp.I which was highly significant and was <0.05 in Gp. II Vs Gp. III which was significant statistically.

Difference in Post operative Recovery Period: The total recovery time in *Vataj Pradhan Prakriti* patients was 3.60, in *Pittaj Pradhan* patients it was 4.70 and in *Kaphaj Pradhan* patients the mean recovery time recorded was 6.00 which was highly significant. When patients of *Vatapradhan Prakriti*, *Pitta Pradhan Prakriti*, *Kaphapradhan Prakriti* were compared statistically. The result was found statistically highly significant.

Group I - Wipe out period of spinal anaesthesia in 7 (35%) patients was 3 hours, 5 (25%) patients in 3.5 hours, 5 (25%) patients in 4 hours and 3(15%) patients in 4.5 hours was recorded.

Group II - Wipe out period of spinal anaesthesia in 3 (15%) was 4 hours, 8 (40%) patients in 4.5 hours, 7 (35%) patients in 5 hours and 5.5 hours in 2(10%) patients was recorded.

Group III - Wipe out period of spinal anaesthesia is 5 hours only in 1 (5%) patient, 5.5 hours in 4 (20%) patients, 6 hours in 9 (45%) patients and 6.5 hours in 6 (30%) patients.

This showed that patients of *Vatapradhan Prakriti* took shortest time to recover from the spinal anaesthesia i.e., ~3-4 hours. The patient of *Pitta Pradhan Prakriti* took more time i.e., ~4-5 hours. The patient of *Kaphapradhan Prakriti* took almost greater time i.e., ~5-6 hours than *Pitta* and *Vatapradhan Prakriti* patients. Major constitutions of human being such as *Vata*, *Pitta* & *Kapha* possess distinct variety of metabolic behaviour. Individuals with *Pitta* dominance

and *Vata* dominance show faster metabolic rates than those of having *Kapha Prakriti* because as per the Ayurvedic descriptions, *Vata* possesses abnormalcy with *Agni (Vishamagni)* but due to influence of *Pitta*, it raises *Agni* and *Pitta* shows direct participation in metabolism, absorption as well as digestion while *Kaphaj* individual's *Agni* is weak (*Mandagni*), so easily develops difficulty in digestion and metabolism. So, it is concluded that according to wipe out period of spinal anaesthesia, we can minimize the dose of anaesthetic drug and lessen the chances of toxicity of drug as bupivacaine is a highly cardiotoxic drug than other local anaesthetic agent.

CONCLUSION

The *Prakriti* plays a definite role in the conduct of spinal anaesthesia. It has been observed that *Vatapradhan Prakriti* patients recovers in shortest duration among all patients i.e., 3-4 hours approx. *Pittapradhan Prakriti* patients took more time to recover than *Vatapradhan Prakriti* i.e., 4-5 hours. *Kaphapradhan Prakriti* patients took longest duration to recover from spinal anaesthesia i.e., 5-6 hours. The descriptions in Ayurveda indicates that individuals with *Vata & Pitta Prakriti* are fast metabolizers while those of *Kaphaj Prakriti* are slow metabolizers, which may be comprehended to the extent. Further research is required in large sample size to understand the relation of wipe out period with *Prakriti*. So, lastly the conclusion of this whole study is to minimize the dose of anaesthetic drug and lessen the chances of toxicity of drug. Hence further comprehensive clinical trial is needed on large number of patients.

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