

Spinal anesthesia as contributing factor to chronic low backache: A myth or reality

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Abstract

Background: Backache is a common health problem affecting people and a major cause of physical, psychological and economical burden for the individual as well as society. The occurrence of low back pain in India is high with nearly 60% of the people have suffered from low back pain at some time during their lifespan. Backache was the major cause of patients (13.4%) refusing spinal anesthesia, though even after general anesthesia the frequency of backache is quite high (46%). The relationship between anesthetic technique and the true incidence of postoperative back pain is still controversial. **Material and Method:** We included all patients coming to our hospital for any types of surgery, orthopedic outpatient department with complain of backache and gynecology outpatient department and employees of our hospital. All participants were interviewed based on a questionnaire after taking written informed consent. **Results:** No significant association exists between spinal anesthesia and chronic backache ($p > 0.05$) though a significant number of people associate their backache to spinal anesthesia ($p < 0.05$). **Conclusion:** Chronic backache has an alarmingly high incidence of 58% in Punjab, a state of India. Though people often relate their backache to history of spinal anesthesia, no significant correlation of backache with spinal was seen in our study.

Key Words: Backache, Spinal, Risk factors.

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INTRODUCTION

Backache is a common health problem affecting people and a major cause of physical, psychological and economical burden for the individual as well as society^{1,2}. There is no specific cause for low backache in approximately 90% of patients⁴. Low back pain has an estimated worldwide lifetime prevalence from 50% to 84%⁵. Low back pain in India has alarming high occurrence with nearly 60% of the people in our country have

suffered from low back pain at some point of their life⁶. Backache was the major cause of patients (13.4%) refusing spinal anesthesia, though even after general anesthesia the frequency of backache is quite high (46%). The relationship between anesthetic technique and the true incidence of postoperative back pain is still controversial⁷. Irrespective of anesthetic technique whether general or spinal anesthesia, back pain was seen in almost 25% of the patients who underwent surgical operations^{8,9}. Patients often relate this backache to spinal or epidural if central neuraxial block was mode of anesthesia. Factors like pre operative backache, surgical condition, intraoperative positioning of patient and relaxation of paraspinal muscles under anesthesia may contribute to immediate postoperative backache. Although there are few studies about acute postoperative backache, there is paucity of studies on chronic backache and spinal anesthesia. People often experience first attack of low back pain typically between 30 and 50 years of age, and back pain becomes more common as age

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advances. Backache has multifactorial etiology¹⁰. Nature of low back pain is mechanical in the vast majority of cases. Infections, inflammatory disease of joints, osteoporosis, renal stones, tumour of spine, fibromyalgia, being less common causes.¹¹ As in day to day practice, we come across patients refusing spinal anesthesia due to fear of backache, we decided to survey to find out any correlation between spinal and chronic backache.

Inclusion Criteria: Adults above 25 years of age

Exclusion Criteria

1. Adults with previous spine surgery
2. Pregnant females

MATERIAL AND METHOD

We included all patients coming to our hospital for any types of surgery, orthopedic outpatient department with complain of backache and gynecology outpatient department and employees of our hospital. Low back pain (LBP) is pain, muscle tension, or stiffness, localized below the costal margin and above the inferior gluteal folds, with or without referred or radicular leg pain (sciatica) ⁽³⁾. Backache is said to be as acute when duration of backache is less than 6 weeks, sub acute between 6 weeks to three months and chronic when lasts longer than 3 month All participants were interviewed based on a questionnaire after taking written informed consent. Assuming incidence of backache 60% and precision 5% and 95% level of confidence, sample size was 368, calculated using Daniel's formula. We interviewed 375 adults. Our questionnaire include participant's particulars such as age, gender, weight, height, education and occupation, whether underwent any surgery, time past since surgery, type of surgery, history of spinal anesthesia or general anesthesia, any backache afterwards (within few hours to one week), and duration of backache, backache aggravating and relieving factors, severity of backache, whether there was tenderness at a point, classical backache or pain radiating to buttocks or legs, any co- morbid conditions, whether participants attribute their backache to spinal anesthesia and choice of anesthesia

RESULTS

Participants were categorized according to age, gender, basal metabolic index, education status and their

occupation and presence or absence of backache with or without history of spinal anesthesia (table 1). Overall incidence of backache is 58% in our study. Backache is associated with age, gender, body mass index, occupation and education. Physical activities such as lifting weight more than 20 kg, forward bending without support of arms, frequent kneeling, bending and squatting, prolonged standing (4 hours), prolonged sitting (more than 4 hours) and trauma to back are significantly associated with backache ($p < 0.05$) (table 2). There was no statistically significant association between spinal and backache among all participants ($p < 0.05$) (table 3). Backache was present in 100 (45%) participants who had history of spinal anesthesia. 13 participants had acute postoperative backache starting within 24 hours up to one week. 24 participants experience backache within one year of receiving spinal anesthesia. Most of the participants were relieved of back pain within one week, but low back pain persisted in 10 (27%) of participants. Though some of the participants had received spinal anesthesia between 1-10 years ago (34) some other 10-20 years ago or as long as 20- 25 or even 30 years ago (14) still 39 (17.6%) participants attribute their backache to spinal anesthesia. Only 20 individuals had preoperative backache (11.7%). The association of history of spinal anesthesia with backache was statistically significant in participants who are engaged in routine work involving frequent kneeling down and bending, leaning forward without support of arms, and those who do prolonged standing ($p < 0.05$). (table 4) Maximum participants have mild backache (43%) followed by moderate (30%) and severe (20%). Increased workload is backache aggravating factor in majority of participants followed by forward bending without support of arms, prolonged standing and sitting, lifting weight more than 20 kg. Backache is relieved by rest (in maximum number of participants) followed by analgesics, massage and physiotherapy. A statistically significant number of participants associate their backache with spinal anesthesia (table 3). In spite of backache and history of spinal anesthesia, still 39 (10.4%) participants have spinal anesthesia as their choice. 35.7% of total participants have preference for spinal anesthesia and 42.5% of participants consider general anesthesia as their choice. 21.6% of participants have no particular choice of their own for type of anesthesia.

Table 1: association of personal variable with backache

Variable	Number of participants with backache and no spinal	Number of participants with no backache and no spinal	Number of participants with backache and history of spinal	Number of participants with no backache and no history of spinal	Chi square	P – value
Age						
25-35 years	55	27	26	27	4.35	0.037*
36-45 years	32	19	26	18	0.13	0.71
46-55 years	34	16	22	14	0.43	0.50
56-64 years	6	8	10	11	0.76	0.78
>65 years	0	8	7	9	4.94	0.026*
Gender						
Male	43	29	24	32	2.94	0.086
Female	80	33	83	51	2.14	0.143
BMI:						
<18.5	7	5	4	7	1.11	0.29
18.6-24.9	49	38	39	45	1.6	0.19
25-29.9	41	16	26	24	4.5	0.034*
>30	15	2	31	26	6.3	0.012*
Education:						
Illiterate						
Under-matric	10	11	10	13	0.75	0.78
Matric	23	24	31	31	0.12	0.91
Undergraduate	28	6	26	13	2.32	0.12
ate	22	13	16	11	0.83	0.77
Graduate	12	4	4	10	6.47	0.011*
Post graduate	18	5	21	13	1.73	0.18
Occupation:						
Housewives						
Farming	40	18	45	27	0.59	0.44
Light manual worker	20	6	16	18	5.48	0.019*
Staff-nurse /technician	31	13	6	15	11.1	0.001*
Doctor	14	11	8	4	0.38	0.53
Shopkeeper/supervisor/teacher/accounant	12	2	8	8	0.00	1.00
	11	14	9	18	0.62	0.43

Table 2: Association of risk factors for backache

Risk factors	Total number of participants	Total number of participants with backache	Total number of participants without backache	Chi square	p-value
Lift weight more than 20 kg daily	184	121	63	6.16	0.008*
Do not lift weight					
Routine work involves frequent bending forward without support of arms	310	190	120	4.11	0.04*
Prolonged standing (>4 hours)	211	171	39	99.8	0.000*
Prolonged sitting (>4 hours)	209	150	59	32.1	0.000*
Frequent kneeling down/bending/ Squatting	240	186	54	9.5	0.000*
Trauma to back	83	70	13	28.4	0.000*

Table 3: Association of backache with history of spinal anesthesia

	Backache	No backache	Chi square	p-value
Spinal	100	71	0.26	0.87
No spinal	121	83		
Associate backache with spinal	56	6	31.7	0.000*
Do not associate backache with spinal	69	73		

Table 4: Association of backache with history of backache with various risk factors

Risk factors	Backache and history of spinal	Backache and No history of spinal	Chi square	P – value
Lift weight more than 20 kg daily	40	27	0.67	0.79
Routine work involves frequent bending forward without support of arms	74	33	13.4	0.000*
Prolonged standing (>4hours)	58	29	4.89	0.02*
Prolonged sitting(>4hours)	52	39	0.14	0.70
Frequent kneeling down/bending/ Squatting	59	28	6.36	0.012*

DISCUSSION

Incidence of low backache is quite high (58%) in population of Punjab (India). A significant number of people associate low backache to past history of spinal anesthesia though no statistically significant association of backache with spinal anesthesia was observed. Other risk factors were present in significant number of participants with backache in addition to history of spinal anesthesia. Low backache is a major public health problem and is responsible for refusal of spinal anesthesia by patients in our state. Incidence of low backache in India is 60% which is quite high⁶. Incidence of backache after surgery is 25% irrespective of type of anesthesia whether spinal or general^{8,9}. This depicts only acute postoperative backache. We found acute postoperative back pain in 12.9% of the participants who received spinal anesthesia. There is paucity of data regarding any correlation between type of anesthesia and low backache in population of India. Therefore we designed this study to find incidence of backache, any correlation of backache with spinal and various risk factors associated with backache in addition to history of spinal anesthesia. We found a high incidence (58.4%) of backache in our study population. A study was conducted by Mathew *et al*¹² to estimate the prevalence and correlates of low back pain among adults aged 20 years and above in Coimbatore, Tamil Nadu revealed that 1-year prevalence of low back pain among women was 52.9%. Incidence of backache (45%) was highest in 56-64 years of age in our study. The common age for onset of low back pain is between 30 and 50 years and tendency to suffer from backache increases with advancing age. As people grow older, loss of bone strength from osteoporosis can lead to

fractures, and at the same time, muscle elasticity and tone decrease. The intervertebral discs begin to lose fluid and flexibility with age, which decreases their ability to cushion the vertebrae¹¹. Incidence of backache with history of spinal anesthesia (42%) was high in 25-35 years of age. According to various studies, low backache is a very common problem among adolescents; with highest incidence in third decade of life¹³. Majority of participants in this age group were females who were physically active. Correlation of history of spinal anesthesia with backache was statistically significant in 25-35 years of age and elderly participants with more than 65 years of age. Incidence of backache was high in females (65.9%) as compared to males (52.3%). This difference was statistically significant ($P < 0.05$). Incidence of backache with history of spinal anesthesia was also comparatively high in females (50.9%) than males (29.8%). Association of backache with history of spinal anesthesia was not statistically significant among both sexes. On searching literature we found some studies predict female gender as risk factor for backache and few others says both gender can be equally affected. Studies by Linton *et al*.¹⁴ and Thomas *et al*¹⁵, demonstrated a higher incidence in females and who also develop chronic backache compared with males. Observation made by Hestbaek *et al*¹⁶ showed no sex predilection for low backache. When participants were analyzed on basis of body mass index, a statistically significant association of backache to body mass index was noticed ($p < 0.05$). Backache was observed in 62.1% overweight and 62.6% of obese participants. On the other hand, participants with normal BMI had incidence of backache 51.1% and 47.8% in thin individuals. Backache in participants with history

of spinal anesthesia was significantly associated with spinal anesthesia in overweight (BMI 25-29.9) and obese (BMI > 30) participants. Occurrence of backache is influenced by education level and occupation. Incidence was highest in people studied up to tenth standard (73.9%) and in postgraduates (68%). Doctor seems to be worst affected by backache with incidence as high as (66%) followed by housewives (64%) and farmers (62%). A significant correlation of backache with history of spinal anesthesia was seen in graduate participants and in individuals who are farmers and ones involved in light manual work. There is high incidence of backache in our population. Risk factors associated with backache in Punjabi population are age, gender, BMI, education and occupation. Some of our observations were in accordance to previous studies while other was in contrast. This study by Biglarian, *et al.* (2012)¹⁷ in Iran and it was reported that factors such as age, females, marital status, obesity, low family income, smoking, and lower education were associated to low back pain. Day to day activities in our population require bending forward without support of arms, frequent kneeling down /bending /squatting, prolonged standing, prolonged sitting and even lifting weight up to 20 kg, incidence of backache was maximum in individuals with prolonged standing (81%) frequent kneeling down (77.5%) prolonged sitting (71%), lifting weight (62.5%) and bending forward without support of arms (59.6%). A significant association of backache was found with all these activities and to trauma of back by falling down ($p < 0.05$). A significant number of our participants were doing these activities. The study showed that there was a significant association between the mean score of low back pain and age, marital status, education, total family income, type of delivery, number of children, hours of sweeping house, washing clothes and washing vessels per day, menopause status, and chronic illness ($P < 0.001$)¹⁸. A large number of (39%) participants underwent more than one type of surgery. So establishing relationship of backache with type of surgery was not possible. Backache is a commonly seen problem in our community. Spinal anesthesia is also frequently used because of its obvious advantages. Subarachnoid block is still the first choice especially for below umbilical procedures because of its simplicity, rapid onset of action, less failure rate, cost-effectiveness, and superior level of blockade⁽¹⁹⁾. Patients usually feel and remember the discomfort and pain associated with spinal. Once anesthetized, patient does not experience any pain due to dissection or odd positioning. Therefore patients easily put a blame of backache on spinal anesthesia. This study found that quite a number of participants (30%) are of belief that their backache is due to spinal anesthesia in past ($p < 0.05$). In spite of backache and history of spinal

anesthesia, 39 (10.4%) participants have spinal anesthesia as their choice. 35.7% of total participants have preference for spinal anesthesia. 30% of participants told that they will not choose spinal for fear of backache. This is not in accordance with literature. Backache was the major cause of patients (13.4%) refusing spinal anesthesia⁷. The back is a complex structure with delicate frame of numerous bones, joints, muscles, ligaments, with extensive network of nerves as well as muscular and ligamentous attachments. Further numerous divisions of muscle mass, various planes of connective tissue, and multiple tendons getting attached over comparatively small areas of vertebral bodies and lamina could be the reason for prevalence of neck and back pain and entire anatomical complexity explain the difficulty in locating the source of back pain⁽²⁰⁾. So such scenario where multiple factors play role in occurrence of low backache, preoperative counseling of patient to allay their misbelief that backache problem is confined to spinal anesthesia, is must.

CONCLUSION

In population of Punjab, incidence of backache is high. A significant number of people believe this is due to spinal anesthesia, though we did not find statistical significant association of backache with history of spinal anesthesia. Various risk factors associated with backache are age, female gender, occupation, high BMI and activities such as lifting weight, prolonged standing and sitting, frequent forward bending without support of arms and frequent kneeling down, squatting.

Limitation of study: This was survey regarding backache based on recall basis of the participants. More prospective studies are required in our population to find the relation of spinal anesthesia and chronic backache.

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