

## Evaluation of the Effects of Resting in Appearance of Post Lumbar Puncture Headache

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Received: 28 May 2012 ; Accepted: 26 Feb. 2013

**Abstract-** Lumbar puncture (LP) is a procedure for obtaining spinal fluid from spinal meningeal spaces this can be done as a diagnostic or therapeutic procedure which can result in to a typical positional headache named as post lumbar puncture headache .This can cause a lot of discomforts for patients and makes fear from the procedure. This study designed to evaluate the effect of resting position after LP on post lumbar puncture headache (PLPH). Patients who had a diagnostic lumbar puncture were divided randomly in two groups .Group A patients had one hour rest in the supine position while group B patients had one hour rest in the prone position. Both groups followed for appearance of symptoms of PLPH for 5 days. 119 patients completed the study, 57 (48%) male patients and 62 (52%) female .PLPH totally appeared in 38 (31.9%) patients .In the group A PLPH was present in 20 patients whereas in group B it was present in 18 patients. Statistical analysis showed no significant differences between two groups ( $P>0.07$ ). Position of rest after LP has no significant effect on reducing post lumbar puncture headache and there is no need to emphasize on position of rest after LP.

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*Acta Medica Iranica*, 2014; 52 (1): 43-45.

**Keywords:** Headache; Lumbar puncture; Prone Position; Rest

### Introduction

Spinal puncture developed in late 1800 and in 1891 Wynter and Quincke aspirated CSF for treatment of raised intracranial pressure in a patient with tuberculosis meningitis (1,2). Lumbar puncture (LP) is a procedure used to obtain a sample of cerebrospinal fluid (CSF) (2-4). CSF protects the brain and spinal cord. It is produced constantly and is replaced after a puncture by excretion from choroid plexus (2,4). The syndrome of post lumbar puncture headache (PLPH) was first described by Dr August Bier in 1898 (5). This headache consists of a severe non throbbing headache that is located in the occipital and frontal regions it aggravates with upright or sitting position and subsides in the recumbent position (1,6,7). Another symptoms such as nausea, vomiting, neck stiffness, diplopia, tinnitus and radiating pain to the neck and shoulders may be associated with

these symptoms (4,5,8,9). The onset of headache is typically 24-36 hours after lumbar puncture (LP) but it could be delayed up to 10 days in some reports (1,7,10-12). These headaches are usually selflimited and resolves within few days, but some reports are present which report several months duration of severe headache (7,13,14). This syndrome essentially is a clinical diagnosis, the history of LP and typical positional headache which aggravate in a sitting position and resolves in decubitus position confirm the diagnosis (7,15). Some risk factors are suggested which can induce or intensify PLPH. Most known of these are ,needle size, direction of bevel, needle design, replacement of the stylet before withdrawal, number of LP attempts , position of patient before LP, and resting after LP (5,6,15-23). Prevalence of PLPH is reported from 20% to 30% in most investigations that is somewhat high (15,17,24).

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**Table 1.** Demographic characteristic of patients.

Patients	Male	Female	Age (years)	Weight (kg)	Group A number	Group B number	P value
Total	57	62	49.96± 11	67.3± 12			
Headache							
No					40	41	
yes					20	18	>0.07

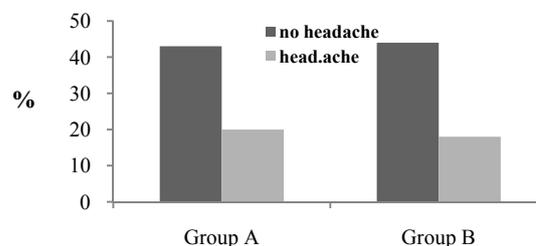
This pain disturb the patients and sometimes patients will avoid repeating the test in spite of its necessity. The definite pathophysiology of PLPH is unknown. Measurement of CSF pressure after headache shows a lower than normal pressure and some studies suggests that downward movement of brain as a result of this low pressure causes pressure upon pain sensitive structures of skull base which reduce in the recumbent position (1,5,15,17). This study is a clinical trial which is designed to evaluate the effect of resting position on patients with PLPH.

### Materials and Methods

This clinical trial was conducted on 119 patients from 2007 to 2008 in Shahid Mostafa Khomeini Hospital. All patients had diagnostic lumbar puncture with a definite reason other than investigational purpose for this project and no LP was done without definite clinical indication. After LP Patients divided randomly in two groups patients in the group A (60) had one hour rest in the supine position and patients in group B (59) had one hour rest in the prone position. All patients followed 5 days for appearance of clinical symptoms of PDPH. In the first day patients visited every 12 hours and daily from the second day for the appearance of a positional non throbbing headache. Patients with frequent headache syndromes with more than two episode in a week and patients with history of repeated LP were not permitted. All tests were done with a neurologist with at least five years experience. LP was done in L3-L4 intervertebral space with a 21gauge disposable quincke needle and at least 5 cc CSF was extracted in all patients .The aims of study and the procedure was described thoroughly for all patients and all patients had informed written consent. All the data analyzed with SPSS soft ware.

### Results

119 patients completed the study. There was 57 (48%) males and 62 (52%) females, mean age of patients were 49.92±11 years in male patients and 50.00±11.1 years in female patients. mean weight of patients were 67.3±12 kg and mean height of patients were 173±14cm.



**Figure 1.** Comparison of PLPH appearance in the group A (supine) and B (prone).

Post lumbar puncture headaches occurred totally in 38 (31.9%) patients. This occurred in 19 persons in both sex and there was no significant statistical difference according to sex. In the group A patients (one hour rest in the supine position) PLPH appeared in 20 patients whereas in group B (one hour rest in the prone position) it appeared in 18 patients .Statistical analysis showed no significant difference between two groups ( $P>0.07$ ) (Table 1 and Figure 1).

### Discussion

Post lumbar puncture headache (PLPH) is a positional headache after diagnostic or therapeutic puncture. There are many risk factors for PLPH although there is no consensus about them. some references advise resting in the prone position for prevention from this disorder whereas some references don't accept it and suggests rest with no emphasis on the position. In this study we compared resting in the prone position with resting in the supine position after lumbar puncture and found no significant difference in appearance of PLPH between two groups .This study is in agreement with Ropper and Gonzales which reported no effect on reduction of PLPH with resting after LP (25,26). However this study didnot confirm haugberg (27) who suggests resting after LP for reduction of PLPH .Pathophysiology of PLPH is not obvious although, some theories are present which most important of them is diminished CSF pressure due to CSF leak after lumbar puncture (28). This causes downward movement of the brain and causes pressure upon pain sensitive structures (4,8,9,15). Resting in a specific position after lumbar puncture is emphasized in some studies whereas some studies have rejected any

benefit from this approach. CSF is excreted continuously and is replaced nearly three times daily; therefore the most important factor in lowering CSF pressure is continuous leakage of CSF from remained hole in the dura .resting position after puncture has no effect on this leakage because the hole is closed with some delay and leakage is continued in any position. In conclusion, Despite the emphasize of some references on the effect of resting in the prone position for reducing PLPH this study shows that there is no difference between supine or prone position on reducing PLPH .

## Acknowledgments

This project was a dissertation for graduation from medical school of shahed university. I would like to thank from medical ethic committee of shahed university which approved this project .

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