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BENIGN PAROXYSMAL POSITIONAL VERTIGO: ASSESSING THE EFFICACY OF THE SEMONT LIBERATORY MANEUVER IN ACUTE CASES

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Abstract

Background:
vestibular dysfunctions patients' common complains is dizziness & lack of balance, which impacts their quality of life (QoL) negatively. For the symptomatic management of acute benign paroxysmal positional vertigo (BPPV) medications are prescribed which are effective in normalization of its symptoms. Vestibular rehabilitation with specified follow up exercise regime is intervened more effectively in the treatment of BPPV patients.

Method: *20 BPPV patients were examined & screened by doing Dix-Hall Pike positioning & their respective DHI scores were recorded. The recruited study's participants were treated with sermon liberatory maneuver (SLM). The patients were follow-up & readings were taken at the completion of week-1 & month-1. An average DHI scores was recorded by performing repeated procedures if necessary.*

Results: *Post-SLM treatment results showed that BPPV symptoms in most study's participants (n=16) disappeared & no patients has negative test by 1-week or 1-month completion. The SLM 1st success rate was 80% & the total success rate was 91%. DHI post-test score also decreased with the interventions of SLM. BPPV patients who treated within one week of onset had found to be good prognosis with SLE. This study found that SLE was ineffective in the management of BPPV in 4 study's participants.*

Conclusion; *SLE is safe, cost- effective & easy physical therapy interventions for the treatment of BPPV patients.*

INTRODUCTION

Patients with vestibular dysfunctions commonly experience a sensation of spinning or whirling or perceive similar symptoms such as; spinning motions, nausea, vomiting & lack of balance[1,2]. Vertigo may be caused by a) central vestibular impairments b) Peripheral vestibular impairments. Acute benign paroxysmal positional vertigo (BPPV) is the most common vertigo cause by Peripheral vestibular impairments. BPPV symptoms includes; spinning motions, vomiting, nausea, double vision & lack of balance. Some of BPPV symptoms may subside by itself without any interventions but some time it persists. Now, for this persisted BPPV proper treatment is needed for the crystals that causing inflammation in the semicircular canals & need to be moved to otolith organ from semicircular canal. Medications for the symptomatic management & habituation exercises usually advised which relives the symptoms for a short period of time but BPPV symptoms re-appears usually, thus the effectiveness of medications & habituation exercise are considered a permanent & highly effective solutions. Others maneuvers, used for the treatment of BPPV patients includes; a) Brand Daroff exercise b) Path physiology c) Canalith repositioning[3–6].

The Canalith repositioning maneuver is based on a theory, called canalithiasis theory of free-floating debris in the semicircular canals[1]. The 2nd theory is, cupulolithiasis[2], SLM is based on cupulolithiasis, which involves a maneuver in which the BPPV patient is rapidly moved through opposition in order to dislodge the debris or crystals for the cupula from the involved side. Follow up care includes for Cupulolithiasis, a) BPPV patient must avoid any provocative position or movement for 1-2 days b) BPPV patient must keep the head in the upright position for 1-2 nights after the SLM maneuver. Brand Daroff exercise were basically designed for the CNS habituation to the positions that triggers BPPV symptoms but it has been reported that this exercise may act to dislodge debris from the cupula or may caused to removed debris from the canal[3]. DHI (Dizziness Handicapped Inventory) is used for the screening of BPPV patients worldwide to its high sensitivity & specificity[7–10].

BPPV prevalence is higher in female (2:1) & also female incidence & prevalence is higher in idiopathic BPPV (2.4:1) as reported in the Literature which may be explained due to different hormonal profile, which leads to the formation of endolymphic deposits, especially at the post-menopausal women which leads to BPPV.

Methodology; For the conduction of this study 20 BPPV patients were recruited for the Neurology & physical therapy department of the hospital through convenience sampling. The treatment was given for 15 minutes/session to each enrolled patients with the follow-up review at the completion of week-1 & month -1. The primary outcomes scale/measures/test used for this study was; a) Dix-Hall-Pike test b) DHI (Dizziness Handicapped Inventory). The inclusion criteria were a) Confirmed BPPV patients with age 45-65Years, irrespective of their gender or any other co- morbid conditions apart from the cognitive & perceptual impairments b) acute BPPV patients i.e within 3 months of onset, while the exclusion criteria were; a) chronic BPPV patients with onset more than 3 months b) acute BPPV patients with perceptual & cognitive impairments. The selected study participants were briefed about the procedure, aim & purpose of the study & their written consent is taken for participation in the study. Prior to the conduction of the study ethical approval was taken from the admin of the hospital concerned. The SLM procedure was as follow; the total session with each BPPV patients lasted for 30 minutes, comprised of; 15 minutes for the patient's assessment & 15 minutes for performing maneuver. For the identification of the provoking side of the BPPV patients, Dix-Hall pike test was performed. Patient seated by the side of the examination couch; the patient head is then turned to 45^0 to the un-affected side & then the patient is asked to lie down on the affected side. This adopted position is maintained for further 5 minutes without change of the head position, now after this, the patient is directed to sit back & then subsequently lie down on un-affected side. The patient is directed to remain in this new position for 5 minutes & then the patient is brought back to sitting position. Home advices given to each treated patients were; Patient must avoid any provocative position or movement for 1-2 days b) Patient must keep the head in the

upright position (vertical position) for 1-2 nights after the SLM maneuver. All study's participants were assessed initially (Pre-test score or baseline score) & at the completion of week-1 & month -1 (post-test score or post-treatment score). For each study's participants Dix-Hall test was performed & DHI was used as outcome measure. Data obtained from the 1-week of all study's participants were considered as control groups values while data obtained at the completion of 1-month were considered & treated as experimental group values. Kruskal-wallis test was used to find the success rate of the maneuver. 20 BPPV patients are assessed before (Pre-test or Pre-treatment score) & after the completion of 1-weak & 1 –month (Post-test or Post-treatment score) through Dix-Hall-pike test & scored on DHI. The obtained score of DHI were further analyzed. Means± SD were calculated & the observed difference were tested at P<0.05 with Kruskal-wallis test.

Results; All study participants recruited for this study had a mean range of 55 years & were BPPV patients with the onset about 5.2 weeks. All the subjects were screen before the study & found positive on Dix-hall pike test as confirmed cases of acute BPPV. After single SLM treatment among 20 BPPV patients, symptoms disappeared in 16 patients & subsequently had negative DH test by the completions of week-1 while the rest 4 patients had negative DH test by the end of 1-month. Thus, the first success rate was 80% & the total success rate was 91%. DHI (Means± SD) for all subjects in the pre-test was 70.34, at the completion of week -1, 38.58 & at the completion of month-1 18.5. The obtained score of DHI were further analyzed. Means± SD were calculated & the observed difference were tested at P<0.05 with Kruskal-wallis test. (Table-1 & 2)

Table-1: Repeated score obtained through DHI

	Pre-test	1-week (completion)	1-month (completion)
Maximum score	92	80	72
Minimum score	56	22	10
Means	70.34	38.58	18.5
Standard deviation (SD)	9.4	14.45	10.34

Table -2: Effectiveness of SLE & Dunn's multiple comparison test

Readings	P-Values	Effectiveness of SLE
Pre-test Vs Post-test (1-weak completion)	P<0.001	<75%
Pre-test Vs Post-test (1-monh completion)	P<0.001	<50%
Post-test -1-weak completion) Vs Post-test -1-month completion)	P<0.001	<25%

Discussion;

The results of this study shows that patients with acute BPPV (acute benign paroxysmal positional vertigo) were found to be clinically responsive with the interventions of SLM. After a single SLM treatment of 20 BPPV patients, symptoms disappeared in 16 patients & subsequently had negative DH test by the completions of week-1 while the rest 4 patients had negative DH test by the end of 1-month, while 4 of them didn't show mush improvement at the DHI after the completion of 1-month SLM, these findings are consistent with the other studies carried on[5,9].

Apart from SLM, other physical therapy maneuver has been reported to be effective in the management of BPPV but comparative studies focusing on the SLM & others maneuvers have not found any statistically difference between the two[9]. The Canalith repositioning maneuver is based on a theory, called canalithiasis theory of free-floating debris in the semicircular canals[1]. The 2nd theory is, cupulolithiasis[11-13], SLM is based on cupulolithiasis,

which involves a maneuver in which the BPPV patient is rapidly moved through opposition in order to dislodge the debris or crystals for the cupula from the involved side. Follow up care includes for Cupulolithiasis, a) BPPV patient must avoid any provocative position or movement for 1-2 days b) BPPV patient must keep the head in the upright position for 1-2 nights after the SLM maneuver. Results shown that patient significantly improved BPPV symptoms even with 2 SLM therapy sessions & that ensuing maneuvers improves 6.9% the global recovery rate, however, the supplementary recovery rate 42% (20/46) not cured after the 2 therapy sessions with SLM[14–16].

This study noted that the more SLM maneuver is repeated, the less it become productive & results in recovery of the BPPV symptoms which is consistent with the other studies as well[9], which is conceptually not based on logic; the probability of recovery could be the same for each SLM therapy but in practice, it was not evident, which is against the study result carried out on the subject[6].

Results obtained in this study are consistent with the hypothesis that within any type of category of vertigo patients the symptomatic decrease appears constant while in some categories no significantly symptom reduction or effectiveness has been noted[9]. Patients intervened with SLM within one week of onset were comparatively found to have good prognosis (<96%) with the intervention of SLM. For those BPPV patient for whom SLM were not effective clinically, other maneuvers may be intervened for the rehabilitation of BPPV as proposed by other studies[17–19].

Conclusion;

SLE is safe, cost- effective & easy physical therapy interventions for the treatment of BPPV patients. Dizziness handicapped inventory (DHI) is a valid & sensitive outcome measure for scoring & dragging BPPV patients. The DIX-Hall pike test was found to be sensitive in BPPV patients' identification & the patients intervened with SLM within one week of onset were comparatively found to have good prognosis with the intervention of SLM.

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