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ORIGINAL ARTICLE

Diagnostic value of repeated Dix-Hallpike and roll maneuvers in benign paroxysmal positional vertigo☆

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KEYWORDS
Dix-Hallpike maneuver;
Repeat;
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Abstract
Introduction: Benign Paroxysmal Positional Vertigo (BPPV) is the most common peripheral vestibular disorder. The Dix-Hallpike and Roll maneuvers are used to diagnose BPPV.
Objective: This study aims to investigate the diagnostic value of repeated Dix-Hallpike and Roll maneuvers in BPPV.
Methods: We performed Dix-Hallpike and roll maneuvers in patients who admitted with peripheral vertigo anamnesis and met our criteria. The present study consists of 207 patients ranging in age from 16 to 70 (52.67 ± 10.67). We conducted the same maneuvers sequentially one more time in patients with negative results. We detected patients who had negative results in first maneuver and later developed symptom and nystagmus. We evaluated post-treatment success and patient satisfaction by performing Dizziness Handicap Inventory (DHI) at first admittance and two weeks after treatment in all patients with BPPV.
Results: Of a total of 207 patients, we diagnosed 139 in first maneuver. We diagnosed 28 more patients in sequentially performed maneuvers. The remaining 40 patients were referred to imaging. There was a significant difference between pre- and post-treatment DHI scores in patients with BPPV ($p < 0.001$).
Conclusion: Performing the diagnostic maneuvers only one more time in vertigo patients in the first clinical evaluation increases the diagnosis success in BPPV. Canalith repositioning maneuvers are effective and satisfactory treatment methods in BPPV.
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PALAVRAS-CHAVE
Manobra de Dix-Hallpike;
Repetição;
Vertigem

Valor diagnóstico da repetição das manobras de Dix-Hallpike e *roll-test* na vertigem posicional paroxística benigna

Resumo
Introdução: Vertigem posicional paroxística benigna (VPPB) é a disfunção vestibular periférica mais comum. As manobras de Dix-Hallpike e *roll-test* são usadas para diagnosticar a VPPB.
Objetivo: Este estudo teve como objetivo investigar o valor diagnóstico da repetição das manobras de Dix-Hallpike e *roll-test* na VPPB.
Método: Manobras de Dix-Hallpike e *Roll-test* foram realizadas nos pacientes que foram internados com história de vertigem periférica e eram adequados aos nossos critérios. O presente estudo contou com 207 pacientes na faixa etária de 16-70 anos ($52{,}67 \pm 10{,}67$). Realizamos uma vez mais as mesmas manobras sequencialmente nos pacientes com resultados negativos. Detectamos os pacientes que tiveram resultados negativos na primeira manobra e que posteriormente desenvolveram sintomas e nistagmo. Avaliamos o sucesso pós-tratamento e a satisfação do paciente mediante a realização do ''Inventário da Deficiência Física na Vertigem'' (Dizziness Handicap Inventory – DHI) na primeira admissão e duas semanas após o tratamento em todos os pacientes com VPPB.
Resultados: De um total de 207 pacientes, 139 foram diagnosticados na primeira manobra. Diagnosticamos mais 28 pacientes nas manobras realizadas consecutivamente. Os 40 pacientes restantes foram encaminhados para exames de imagem. Houve diferença significativa entre os escores do DHI pré- e pós-tratamento nos pacientes com VPPB ($p < 0{,}001$).
Conclusão: A realização das manobras diagnósticas apenas mais uma vez nos pacientes com vertigem na primeira avaliação clínica aumentou o sucesso do diagnóstico em VPPB. As manobras de reposicionamento canalicular são métodos eficazes e satisfatórios de tratamento na VPPB.
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Introduction

Vertigo is separated into two as vertigo of central or peripheral origins. More than 90% of vertigo consists of Benign Paroxysmal Positional Vertigo (BPPV), acute peripheral vestibulopathy, and Meniere disease. Central vertigo is accompanied by neurologic symptoms such as diplopia, dysarthria, incoordination, drowsiness, and weakness. It is milder but lasts longer. Nystagmus resulting from positional maneuvers in central lesions has no latency or fatigue as in BPPV, appears immediately after positional maneuvers, and at the same amplitude and frequency in repeated maneuvers.[1,2]

Benign paroxysmal positional vertigo is defined as dizziness which may last for a few seconds or up to one minute due to sudden movements of the head and accompanying nystagmus. It is the most commonly observed peripheral vestibular disorder in the practice of ear, nose, and throat.[3] Diagnosis of BPPV, which decreases quality of life considerably and is a common disorder, can be established by anamnesis and detection of positional nystagmus.

Certain theories exist regarding the development of BPPV. Schuknecht supports the cupulolithiasis theory, which is based on the attachment of otolithic debris to the cupula in crista ampullaris.[4] Hall et al. propose the theory of canalithiasis, which is based on free-floating debris in the canal.[5] Both these theories support the presence of foreign particles in semisirculer canal as a cause of vertigo.[5]

Detection of the involved canal in BPPV is important in terms of the treatment to be performed. To establish a diagnosis of posterior canal BPPV, characteristic nystagmus should be confirmed by the Dix-Hallpike (DH) maneuver and this is one of the diagnostic criteria.[6] Whereas supine head roll maneuver (Pagnini-McClure maneuver) is used to demonstrate horizontal canal BPPV. Generally, only one maneuver can be performed in patients in polyclinic conditions.[3,6–9]

Patients with positive results after diagnostic maneuvers are administered appropriate treatment maneuvers while patients with negative maneuver results are referred to other branches considering central or internal reasons even if their anamneses are peripheral.[3,6–9] More invasive and costly additional examinations are requested to establish a diagnosis including Magnetic Resonance Imaging (MRI), Computerized Tomography (CT), Doppler, Electronystagmography (ENG), Videonystagmography (VNG), bithermal caloric maneuver, etc.[8,9]

Many studies have reported incorrect negative results with DH maneuver.[10–14] Viirre et al. have indicated that, in 10%–20% of patients with no symptom or examination finding after DH and roll maneuvers, diagnosis was established with sequential repetition of DH maneuver.[12] They suggested that this condition was probably due to debris that was dispersed throughout the posterior canal forming a clot that is more effective in displacing the cupula during the brief period of lying supine. For whatever reason, the simple procedure of repeating the DH maneuver after the horizontal maneuver has increased positivity.[12]

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