BENIGN PAROXYSMAL POSITIONAL VERTIGO – POSITERIOR CANAL

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Background
Benign Paroxysmal Positional Vertigo (BPPV) is one of the unique opportunities in clinical care to cure a patient of debilitating symptoms during the course of the office visit. The test – Dix-Hallpike Test – and treatment – the Epley maneuver – are supported by clinical guideline statements (including the American Academy of Neurology), in addition to numerous systematic reviews (including the Cochrane Collaboration).[1-4] The benefit of the Epley maneuver has been demonstrated in Class I randomized controlled trials. When a 24-hour outcome assessment was used, 80% of BPPV patients randomized to the CRM were cured compared with only 10% of those randomized to a sham treatment, which translates in a number-needed-to-treat (NNT) of 1.4.[5] Randomized clinical trials performed in primary care settings have also repeatedly demonstrated significant benefit.

BPPV is the most common peripheral vestibular disorder with a lifetime prevalence of 2.4%.[6] BPPV accounts for 8% of individuals with moderate or severe dizziness. “Benign” is a misnomer in the label of “Benign Paroxysmal Positional Vertigo”. BPPV patients experience substantial inconveniences and disabilities during symptomatic periods.[7, 8] Nearly 1 in 4 BPPV patients stop driving a car, 1 in 3 miss work, and more than 3 in 4 seek medical consultation.[6]

It is important to note that the inner ear on each side has three semicircular canals, two of which are in the vertical plane (anterior canals [AC] and posterior canals [PC]) and one in the horizontal plane (horizontal canal, HC). BPPV can involve any of these canals, but most commonly affects the posterior canal (PC).[9] It is because of the plane of the PC that they typical nystagmus of BPPV is vertical and torsional. HC-BPPV is the second most common type. Since the HC is in the horizontal plane, the movement of the canaliths triggers horizontal nystagmus, which is different than the vertical-torsional positional nystagmus that is the hallmark of PC-BPPV.

Dix-Hallpike Test
The Dix-Hallpike test (DHT) is used to identify BPPV. The DHT (Figure 1) is the gold standard test for BPPV.[1, 2] It is a simple bedside test. A positive test is indicated by nystagmus which is triggered by the DHT and transient in duration, typically lasting about 10-20 seconds. The direction of the nystagmus is up-beating and torsional when the particles are in the Posterior Canal. Even when physicians use the DHT, there is the possibility that they may not interpret the results correctly.[10] Common errors include calling the test positive for symptoms (rather than nystagmus), and making a BPPV diagnosis when there is any pattern of nystagmus observed. Clinicians must be aware that different patterns of positional nystagmus can be triggered by other disorders. For example, patients with vestibular neuritis have horizontal and persistent (not transient) nystagmus that may become most apparent during positional testing. Central disorders can also cause positional nystagmus, typically downbeat.

Canalith Re-positioning Maneuver
The Canalith Re-positioning Maneuver (CRM) is the treatment for BPPV. The CRM, typically the Epley maneuver, is used to move the otoconia from the inferior portion of the involved posterior canal back into the central chamber of the inner ear (Figure 1).[1] In this location, the positional vertigo no longer occurs. The first two steps of the CRM are the same as the DHT. If the DHT is positive on the right side, then there are three more steps that are used to move the otoconia out of the canal.

The Evidence-Base
The evidence base for the Epley maneuver for PC-BPPV has been reviewed and summarized extensively.[1, 2] In the most recent systematic review by the Cochrane Collaboration, 11 randomized clinical trials determined to be low risk of bias were included.[3] Primary outcomes of the trials were complete resolution of vertigo symptoms or conversion of a positive DHT to a negative DHT. Combining all the eligible trials, 80% patients randomized to the CRM had a positive outcome [range among studies, 34%-98%] compared with 38% of patients randomized to the control group. No serious adverse events were reported.

Inclusion criteria for the trials was typical nystagmus triggered by the DHT. BPPV providers performed most of the treatments. General medical providers, who had been trained by a neurologist, performed the treatments in one of the trials.[11] Of the 8 trials that reported the number of CRMs performed at the treatment visit, 6 (75%) allowed more than one CRM. The time point of the outcome measure varied from "immediately" after the intervention to 1 month later, with the majority performed at about 1 week. None of the trials reported the use of extra equipment (e.g., video-nystagmogram) when performing the intervention. The trial with the smallest absolute effect size (34% [13/38] with negative DHT in treatment group compared with 14.6% [6/14] in the placebo group) had the following characteristics: treatments performed by general medicine providers who had been trained by a neurologist, only 1 CRM performed at the intervention time point, and the outcome measured "immediately" after treatment. The trial with the largest absolute effect size (80% [28/35] with negative DHT in treatment group compared with 10% [3/31] in the placebo group) had the following characteristics: treatments performed by vestibular neurologists, CRM repeated until no nystagmus on DHT up to 3 times, and outcome assessment at 24 hours.

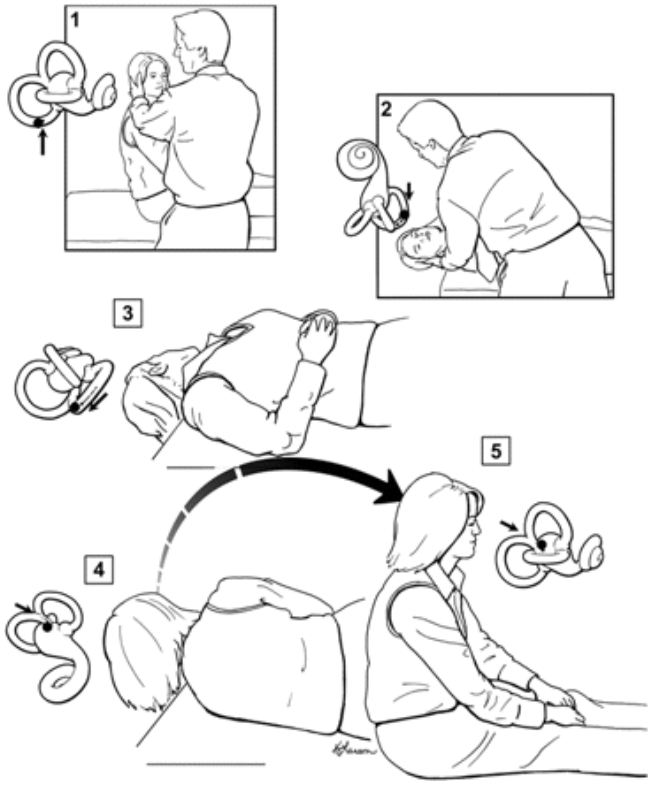
Recurrence

There is limited data about recurrence of BPPV following the treatment. In one study, 36% (15/41) of patients treated for PC-BPPV had a recurrence of symptoms within 4 years of the treatment.[12] The same study reported that the median time to recurrence was longer in patients treated with CRM (690 days) versus those treated with Brandt-Daroff exercises (230 days). A population-based survey in Germany found that about 50% of patients meeting survey criteria for BPPV reported experiencing more than one bout with BPPV symptoms.[6]

Self-treatment

No randomized clinical trials have assessed the efficacy of the CRM as the primary BPPV treatment in the absence of expert observation of the performance. One trial randomized patients to either self-treatment with the Epley maneuver or Semont maneuver. However all patients initially performed the maneuver under the supervision of the instructing physician. Another trial found a benefit in patients randomized to a physician performed Epley maneuver plus self-treatment in the subsequent days compared with physician performed Epley maneuver only. [13]

Figure 1. The Dix-Hallpike Test (Steps 1 &2) and The Canalith Repositioning Maneuver[1]



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