BENIGN PAROXYSMAL POSITIONAL VERTIGO

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A Practical Guide to Dizziness and Disequilibrium
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OBJECTIVES

• Identify common signs and symptoms of BPPV
• Review anatomy and physiology of BPPV
• Review diagnostic tests and common treatment maneuvers for BPPV
• Review recommendations from latest CPG on BPPV

BENIGN PAROXYSMAL POSITIONAL VERTIGO

• Single most common cause of dizziness
• Accounts for 24% of all cases of peripheral vestibular disorders
• Incidence is 64 of 100,00/year
  (Dispenza 2012)
PRESENTATION

• Sudden onset
• EPISODIC: vertigo last <1 minute
• Triggered by changes in head orientation
• May have associated nausea and very occasionally vomiting

PHYSIOLOGY OF BPPV

Understand BPPV in one minute

https://www.youtube.com/watch?v=Xx5dUvtUGBE

MECHANISMS OF BPPV

Cupulolithiasis
• vertigo will last for >60 seconds
• otoconia have adhered to cupula
  (Schuknecht HF, 1969)

Canalithiasis
• vertigo will last < 60 seconds
• otoconia are floating freely through the canals.
  (Hall et al, 1979)
ETIOLOGY OF BPPV

- Idiopathic (50%)
- Vestibular neuritis
- Head trauma
- Osteoporosis
- Following periods of prolonged bed rest
- Association with migraine

(Chan et al, 2017)
(Imai et al, 2005)
(Lopez-Escamez et al, 2005)

DIAGNOSING BPPV

Dix-Hallpike (gold standard):
• Head rotated 45° toward side being tested
• Bring patient supine with neck extended 20°
  - Observe for nystagmus for 30 sec
• + test: Presence of positional nystagmus with reports of dizziness


BENIGN POSITIONAL NYSTAGMUS OF POSTERIOR CANAL

• Latency (5-30 sec)
• Crescendo of intensity
• Torsional/vertical
• Short duration
• Fatigability
• Reversal
**DIAGNOSING HC BPPV**

**Roll Test**
- Assesses horizontal canal
- If patient does not have full cervical ROM then have patient roll to their side

1. Patient lies supine
2. Rotate head rapidly ~ 90° to the side, observe for nystagmus, then return to face up position and allow nystagmus to resolve.
3. Rotate head rapidly ~90° to the other side, observe for nystagmus.

+ test = direction changing horizontal positional nystagmus in bilateral roll

(Bhattacharyya N et al, 2017)

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**BENIGN POSITIONAL NYSTAGMUS OF HORIZONTAL CANAL**

- **HC canalithiasis**
  - geotropic nystagmus more intense on affected side

- **HC cupulolithiasis**
  - apogeotropic nystagmus more intense on unaffected side

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**CANAL INVOLVEMENT**

- Posterior canal: 41-65%
- Horizontal canal: 21-40%
- Anterior canal: rare

- Multiple canal or bilateral involvement common after head trauma
  - Yao et al, 2013
  - Imai et al, 2005
  - Lopez-Escamez et al, 2005
If D-H is negative, but history is consistent with BPPV, perform roll test
If positional testing is +

<table>
<thead>
<tr>
<th>D-H Test</th>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>Negative</td>
<td>Perform CRP based on affected canal or refer to experienced provider</td>
</tr>
<tr>
<td>Positive</td>
<td>Obtain radiographic imaging</td>
</tr>
<tr>
<td>History consistent with BPPV</td>
<td>Order vestibular testing</td>
</tr>
<tr>
<td>Positional testing is +</td>
<td>Reassess within 1 month</td>
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CANALITH REPOSITIONING MANEUVER (EPLEY MANEUVER) FOR PC CANAL

- Diagram illustrates treatment for RIGHT side
- Hold each position for 45 seconds

BARBECUE MANEUVER FOR HC

- Hold each position until nystagmus/vertigo subsides + 15 seconds


Hain, TC. [Video](https://videoress.com/v/Flg-g9f1?loop=1&autoPlay=1)

Hain, TC. [Video](https://videopress.com/v/Fjkpliqq?loop=1&autoPlay=1)
PROLONGED POSITIONING MANEUVER FOR HC

- Patient performs at night when going to bed:
  - **Canalithiasis** (geotropic nystagmus): patient lies down on back for 1 minute, then rolls to the UNAFFECTED side, sleeps on that side all night.
  - **Cupulolithiasis** (apogeotropic nystagmus): patient lies down on back for 1 minute, then rolls to the AFFECTED side, sleeps on that side all night.

RECURRENCE OF BPPV

- 27% over 5 year period
- Half occurring in first 6 months
- The syndrome recurs, not always same side or canal
- Performing daily repositioning maneuver will not prevent recurrence
  (Perez et al, 2012)
- Comorbidities such as low vitamin D levels, HTN, diabetes, osteoarthritis, osteoporosis increases the risk of recurrences
  (De Stefano et al, 2014) (Rhim, 2016)

CLINICAL PEARLS

- If Dix-hallpike and roll test are negative, repeat again
- Older adults may not report symptom of vertigo
  - BPPV may present as imbalance when sitting up from bed
- Expect resolution after 1-5 sessions
- 1/3 to 2/3 of patients have residual dizziness after successful particle repositioning and may benefit from habituation exercises
- If consistent history and + subjective symptoms but no nystagmus, trial 1 session of canalith repositioning maneuvers
REFERENCES