17th Workshop on
NEUROTOLOGY and
MEDICAL AUDIOLOGY

Kolkata : 19th to 21st Jan, 2018

ANTERIOR CANAL BPPV and its controversies.

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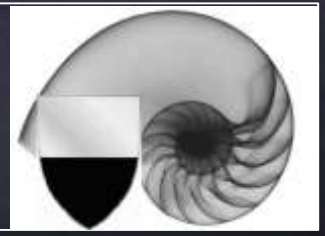


AC-BPPV HISTORY (vs PC)

PC-BPPV

1921, Barany first description

1952, Dix-Hallpike test

1980, Bradt-Daroff exercise

1979-92, Epley maneuver

1983-88, Semont maneuver

AC-BPPV

1987, Katsarkas first hyphotesis
1995, Agus
1996, Herdman (conversion)
2002, Bertholon (detailed)
2012, Vannucchi

Maneuvers:
1999, Honrubia (rev. Epley)
2002, Rahko
2004, Crevits
2005, Kim
2009, Yacovino
2015; Vannucchi

AC-BPPV EPIDEMIOLOGY

pDBN has the same frequency of occurrence as geotropic LC-BPPV, about 15% (50/344)

[Cambi et al., 2013]

PC affected in 88.4%, LC in 6.4%, AC in 5.2% in 543 BPPV subjects.

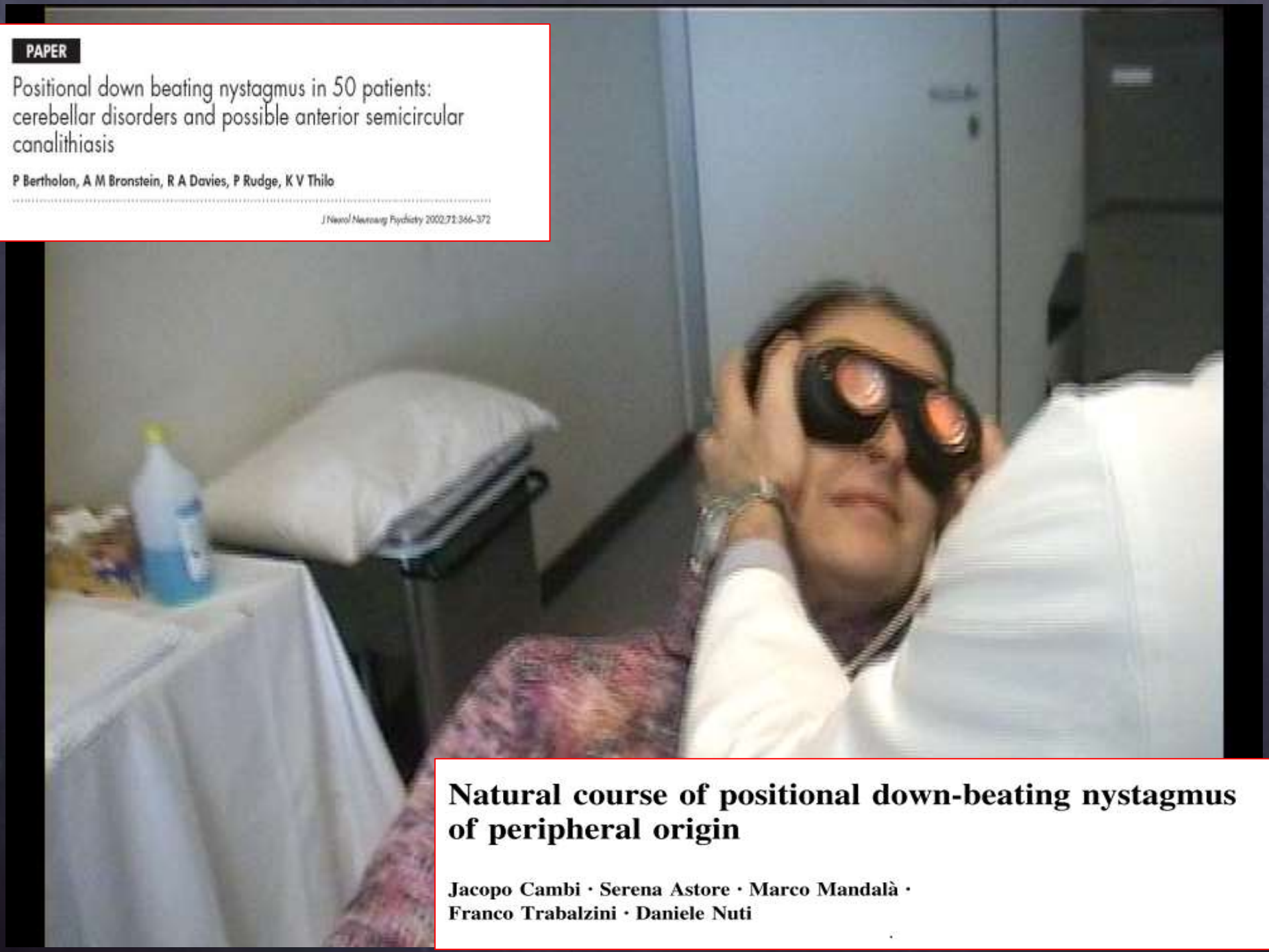
[Soto-Varela et al., 2013]

Rare, 1-2% of patients in large case series.

[Von Brevern et al., 2015]

3% of all cases of BPPV.

[Anagnostou et al., 2015]



PAPER

Positional down beating nystagmus in 50 patients: cerebellar disorders and possible anterior semicircular canalithiasis

P Bertholon, A M Bronstein, R A Davies, P Rudge, K V Thilo

J Neurol Neurosurg Psychiatry 2002;73:366–372

Natural course of positional down-beating nystagmus of peripheral origin

Jacopo Cambi · Serena Astore · Marco Mandalà · Franco Trabalzini · Daniele Nuti

METHODS

53 PATIENTS recruited between January 2011 and April 2012

(3 subjects CNS disease)

"Tertiary referral hospital": ENT Department, University of Siena

All patients underwent :

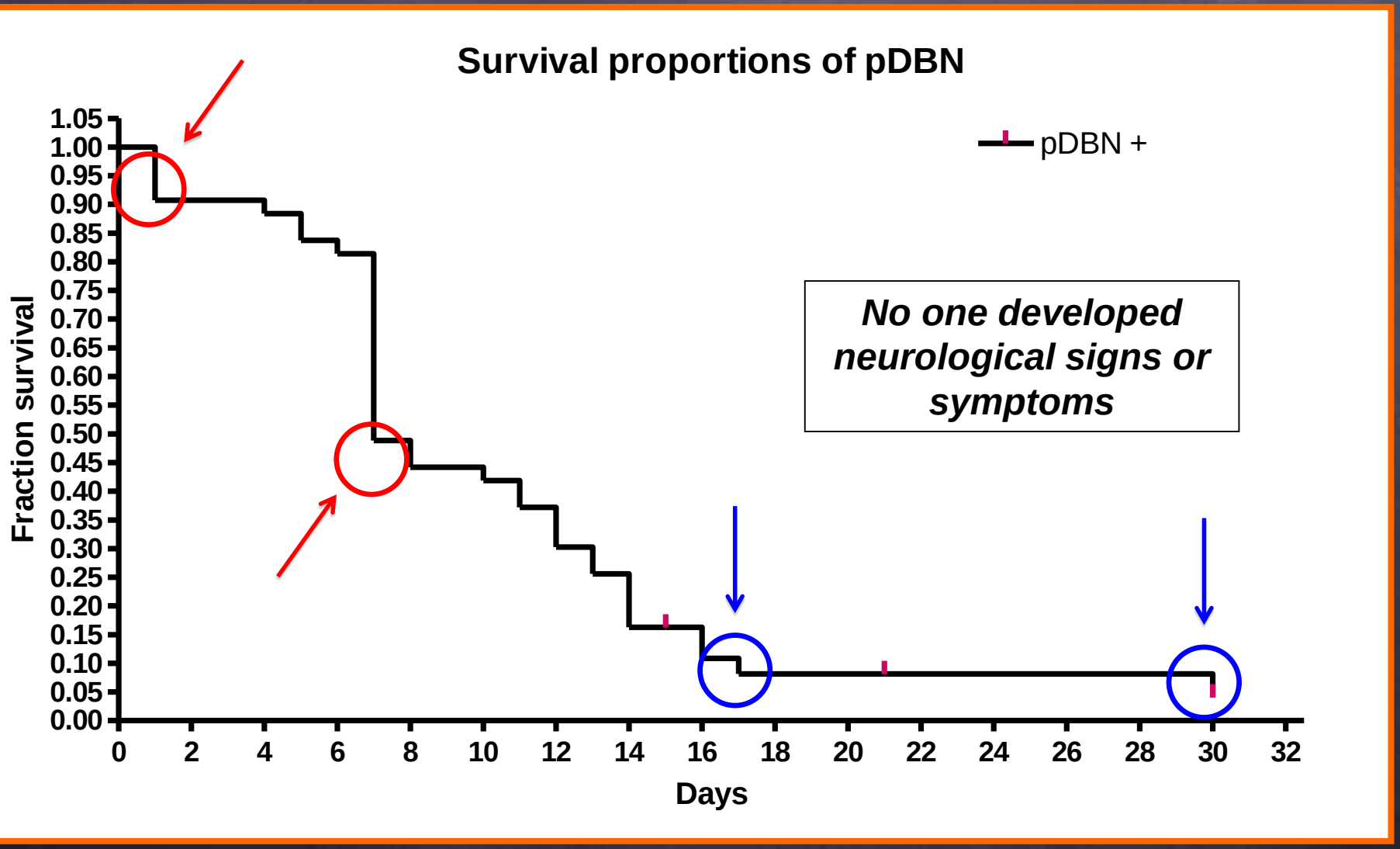
-Complete bedside clinical examination
Dix-Hallpike test / Straight head-hanging maneuver
-Caloric testing
-Pure tone audiometry, speech discrimination test
-Brain Imaging (CT/MRI)

All patients completed at least the 3-6 months follow-up

DEMOGRAPHICAL AND CLINICAL DATA

	SUBJECTS (50)	Statistical analysis
Age (years)	60.6±16.3	/
Sex (male/female)	18/32	/
Mean time from onset to referral (days)	10.8±18.4	/
Dix-Hallpike test (pDBN)	90%	p=0.5926 (Chi-square test)
Straight head-hanging test (pDBN)	98%	
Dix-Hallpike and Straight head-hanging tests	88%	
Subjects recovered at 1 month	98%	/

FOLLOW-UP


Survival proportions of pDBN
pDBN +
Fraction survival
1.05
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
Days
No one developed neurological signs or symptoms

CHARACTERISTICS OF pDBN

		Statistical analysis
Mean latency	4.7±5”	/
Mean duration	40.1±22”	/
Torsional component	34% 45% “clockwise”, 55% “counterclockwise”	/
Inversion in sitting position	6%	/
Habituation	78%	/
PC-BPPV	18% (before) 22% (after)	/
Mean time from onset to recovery (days)	10.2±6.0 (pDBN) 12.6±6.2 (Vertigo)	p=0.0696 (T-test)

CONCLUSIONS

pDBN presents peculiar characteristics (duration, invertion, torsional component, etc…)

Not so rare, frequency of presentation similar to LC-BPPV

The disorder seems in “very close” relation with PC-BPPV

More than pDBN 90% of patients recover in one month

Habituation exercises seem not to play a role in pDBN recovery

3. Emerging and controversial syndromes

The following syndrome
and may be difficult to diff
tional vertigo.

3.1. Canalolithiasis of the

A. Recurrent attacks[2] of
tional dizziness[3,4,5]
turning over in the su
B. Duration of attacks <
C. Positional nystagmu
after a latency of one
Hallpike maneuver (
the supine straight h
ing predominantly
lasting < 1 min.
D. Not attributable to an

Otology & Neurotology
35:e204–e205 © 2014, Otology & Neurotology, Inc.

Imaging Case of the Month

Not So Benign Positional Vertigo: Paroxysmal Downbeat Nystagmus From a Superior Cerebellar Peduncle Neoplasm

*†Jane Lea, *Corinna Lechner, *G. Michael Halmagyi, and *Miriam S. Welgampola

**Institute of Clinical Neurosciences, Royal Prince Alfred Hospital, Central Clinical School, University of Sydney, New South Wales, Australia; and †St. Paul's Rotary Hearing Clinic, Division of Otolaryngology–Head and Neck Surgery, St. Paul's Hospital, University of British Columbia, Vancouver, Canada*

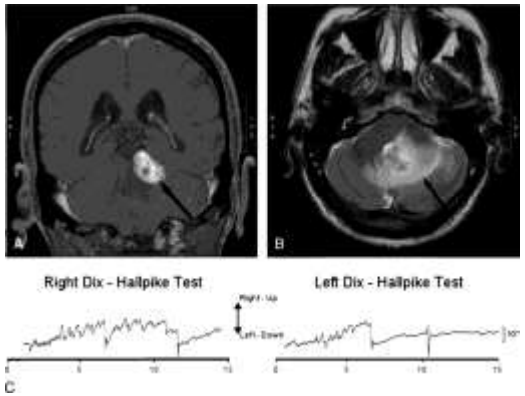


FIG. 1. Brain MRI with contrast (*A* and *B*) and video nystagmography. *A*, Coronal T1-weighted imaging illustrating the left cerebellar-hemangioblastoma (*arrow*). *B*, Edema within the cerebellum and brainstem on axial T2-image (*arrow*). *C*, Videonystagmography, illustrating paroxysmal downbeat nystagmus lasting 5 to 10 seconds on Dix-Hallpike testing.

A 65-year-old man gave a 3-year history of brief spells of spinning vertigo brought on by rolling over in bed or bending down. Dix-Hallpike testing with either ear down provoked almost immediate paroxysms of downbeat-nystagmus and vertigo lasting between 5 and 10 seconds (See Supplemental Digital Content Videos A and B, http://links.lww.com/MAO/A190, http://links.lww.com/MAO/A191, which demonstrate downbeat nystamgus with no latency in the right and left Dix-Hallpike positions, respectively; Fig. 1C). His examination was otherwise normal, with no spontaneous or gaze-evoked nystagmus, normal saccadic and pursuit eye movements,

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This study is not industry sponsored.
The authors disclose no conflicts of interest.
Supplemental digital content is available in the text.

xysmal positional vertigo:
riteria

Committee for the Classification of Vestibular Disorders of the Bárány

re Bertholon[b], Thomas Brandt[c], Terry Fife[d], Takao Imai[e],
vman-Toker[g]
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ns Hopkins University School of Medicine, Baltimore, MA, USA

rational diagnostic criteria for benign paroxysmal positional vertigo (BPPV), formulated by Vestibular Disorders of the Bárány Society. The classification reflects current knowledge of ns of BPPV and includes both established and emerging syndromes of BPPV. It is anticipated liseasse will lead to further development of this classification.

agnus, diagnosis, criteria

eria for benign parox-
) are part of the Inter-
ular Disorders (ICVD)
of vestibular disorders
assification of Vestibu-
iety. As a first step and
on of vestibular disor-
tee of the Bárány Soci-
e definition of vestibu-

lar symptoms [13]. Individual subcommittees including otolaryngologists and neurologists from at least three continents have been tasked with defining consensus diagnostic criteria for specific vestibular disorders.

We have taken additional steps to ensure the broadest possible consensus for the criteria. The classification has been presented and discussed at two meetings of the Bárány Society in 2010 and 2012. Furthermore, a draft of the classification was presented to five other medical societies engaged in neurotology (American Academy of Otolaryngology – Head and Neck Surgery, American Neurotology Society, American Otological Society, European Academy of Otology and Neuro-Otology, and Japan Society of Equilibrium Research). The members of the Bárány-Society were invited to comment on the last draft of this clas-

on Brevern, Department of
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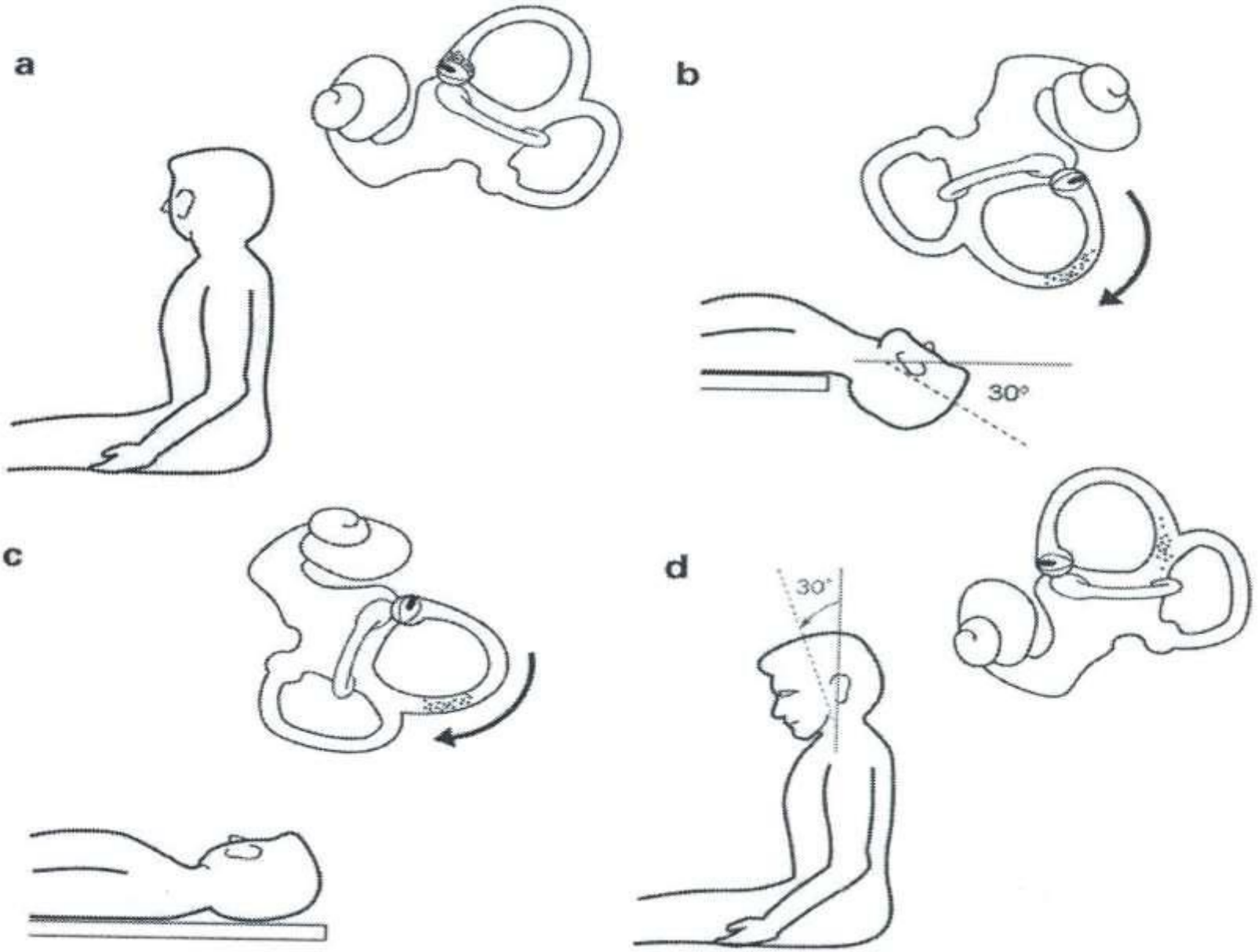
- Positional (ripheral origin
- "Beni stagmus

Treatment of Anterior Canal PPV:

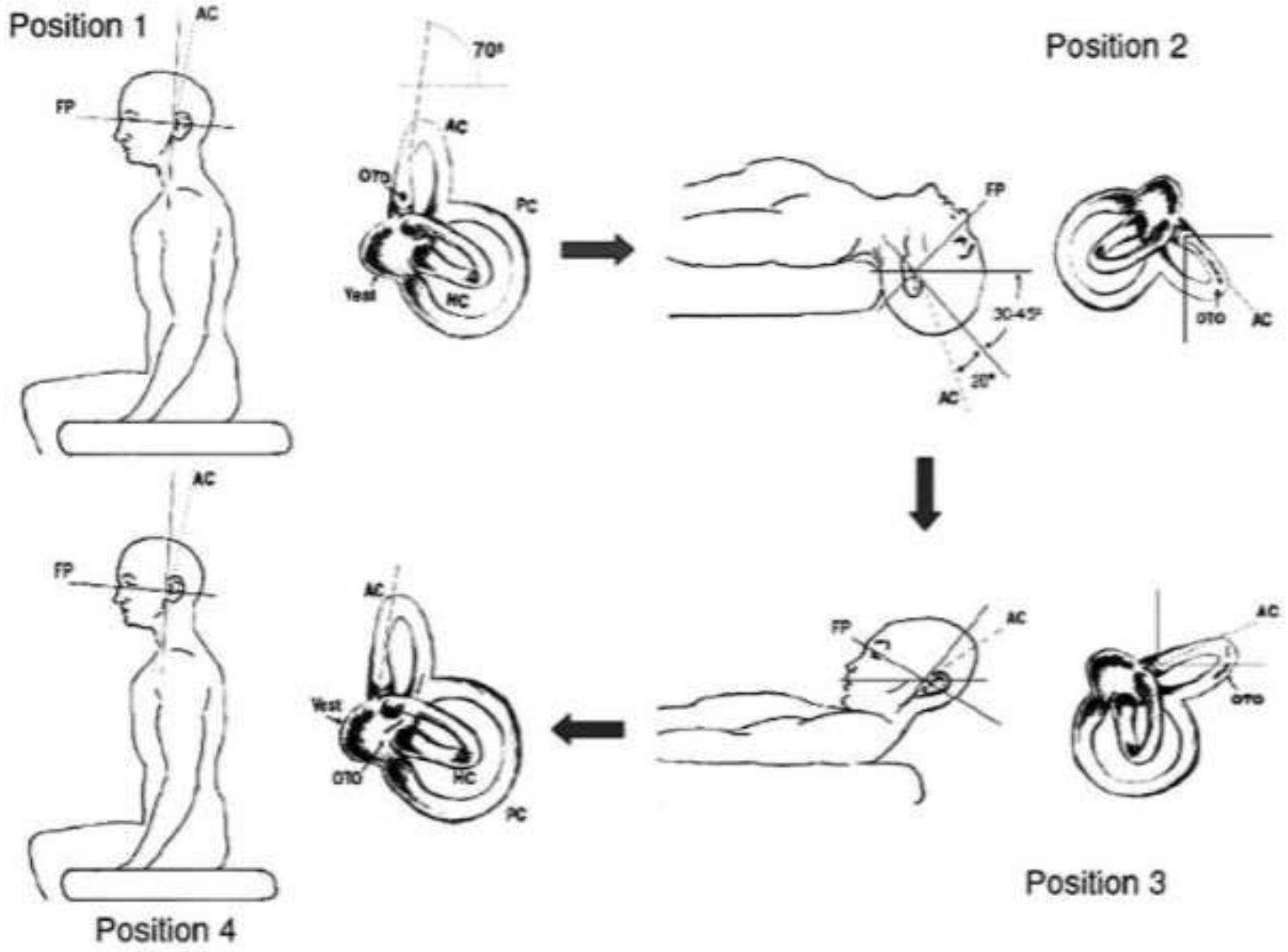
there has been growing interest over the last decade

- Honrubia et al. (1999) (Reverse Epley)
- Rahko T (2002)
- Crevits L (2004)
- Kim YK et al (2005)
- Yacovino (2009)

- Canal Plugging (Brantberg & Bergenius 2002)


a
b
30°
c
d
30°

JACOVINO MANEUVER



Vannucchi et al., 2012

150 subjects (2006-2014)

16 treated with maneuvers

Audiology Research 2015; volume 5:130

Apogeotropic posterior semicircular canal benign paroxysmal positional vertigo: some clinical and therapeutic considerations

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Department of Surgical Sciences and Translational Medicine, Unit of Audiology, Careggi Hospital, University of Florence, Italy

Abstract

We lately reported the cases of patients complaining positional vertigo whose nystagmic pattern was that of a peripheral torsional vertical positional down beating nystagmus originating from a lithiasis of the non-ampullary arm of the posterior semicircular canal (PSC). We considered this particular pathological picture the apogeotropic variant of PSC benign paroxysmal positional vertigo (BPPV). Since the description of the pilot cases we observed more than 150 patients showing the same clinical sign and course of symptoms. In this paper we describe, in detail, both nystagmus of apogeotropic PSC BPPV (A-PSC BPPV) and symptoms reported by patients trying to give a reasonable explanation for these clinical features. Moreover we developed two specific physical therapies directed to cure A-PSC BPPV. Preliminary results of these techniques are related.

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Key words: positional vertigo, down beating nystagmus, apogeotropic variant, *demi Semont*, *45° forced prolonged position*.

Contributions: the authors contributed equally.

Conflict of interest: the authors declare no potential conflict of interest.

Conference presentation: the authors have presented this topic for the first time at the *5° Meeting Vestibolare - Aldo Dufour*, 2008, Florence, Italy; and in the following years, at the *XXXII Congresso Nazionale di Audiologia e Foniatria*, 2009, Florence, Italy and at many other conferences.

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doi:10.4081/audiores.2015.130

Introduction

In a recent paper[1] we described a variant of posterior semicircular canal (PSC) benign paroxysmal positional vertigo (BPPV), which characteristically presents with a torsional vertical down beating positional nystagmus (TVP-DBNy) when the patient is brought into head hanging positions (Dix-Hallpike's positioning and the *enhanced head-hanging position*[2]). Our preliminary study took in consideration the cases of 6 patients complaining mostly positional vertigo, manifesting TVP-DBNy and, for that, initially diagnosed as having anterior semicircular canal (ASC) BPPV. Patients were treated with some physical therapy suitable for vertical canal BPPV (namely the ASC) and, surprisingly, they presented to a next visit with a torsional vertical paroxysmal positional up beating nystagmus suggesting a typical BPPV of the PSC of the side opposite to the one treated.

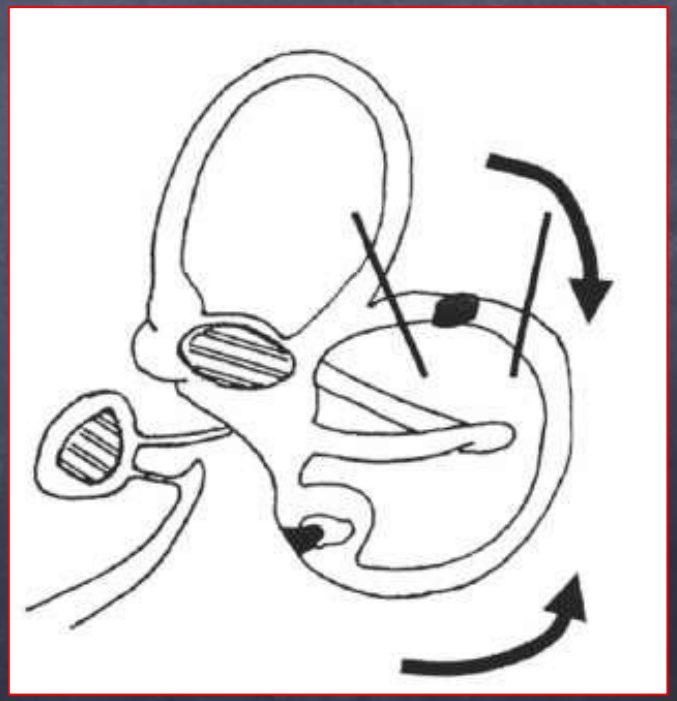
Since it is unlikely that therapy immediately resolves ASC BPPV of one side and that, at the same time (sometimes during the same diagnostic session), PSC BPPV of the other side manifests, we argued that the BPPV treated was of the PSC since the beginning.

In analogy with the homologous lateral semicircular canal (LSC) variant we named this form the *apogeotropic* PSC BPPV (A-PSC BPPV).

To explain TVP-DBNy of A-PSC BPPV we hypothesized a canalolithiasis[3-5] having the otoconial mass localized into the distal part of non-ampullary arm of PSC, near the common crus. In such a case when the patient lays down into head hanging positions, the debris should move towards the ampulla producing an ampullopetal endolymphatic flow thus generating an inhibitory discharge of the posterior ampullary nerve. Such a stimulus, in turn, generates a paroxysmal or similparoxysmal (that is with a *crescendo-decrescendo* course but less intense and longer than usual and sometimes not completely exhaustible) vertical torsional nystagmus, due to the contraction of ipsilateral inferior oblique and contralateral superior rectus muscles.[6] Slow phase of positional nystagmus is directed mainly upwards , with regard to the linear component, being counterclockwise or clockwise (from examiner's point of view) for the torsional component, respectively for right and left PSC involvement (Figure 1). The torsional component is, theoretically, more evident in the eye ipsilateral to the affected PSC.

Since the fast phase of nystagmus linear component is directed downwards into head hanging positions, it beats *away from the ground* being for that *apogeotropic*.

Basing on nystagmus fast phase direction of the linear component the latter form should be distinguished from the more frequent PSC BPPV variant in which the debris are localized into its ampullary arm: in such a form, nystagmus fast phase direction of the linear component is up beating when head is hanging and for that it is *geotropic* (G-PSC BPPV).

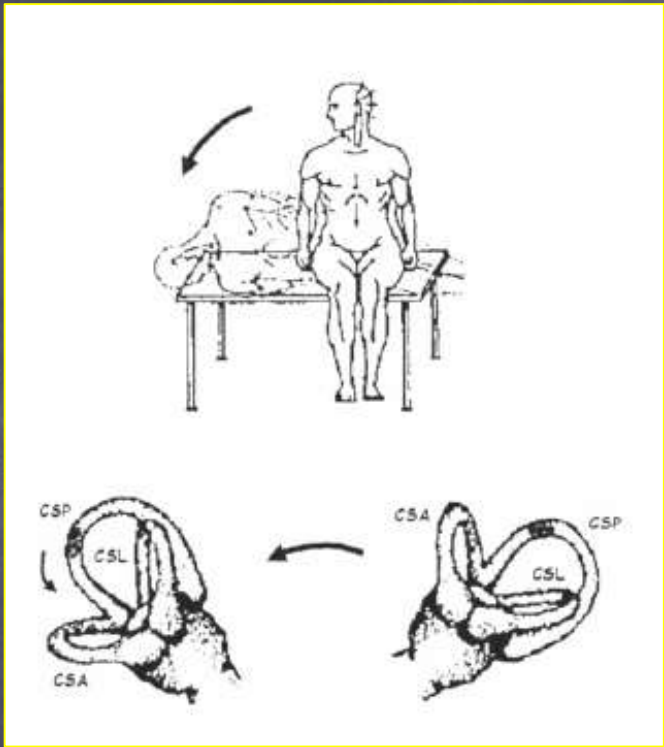


TREATMENT for LEFT APO PC-BPPV

- not too briskly
- to avoid ampullopetal flow

- final sharp deceleration
- to take advantage of inertia of otoconia

- Liberatory ny



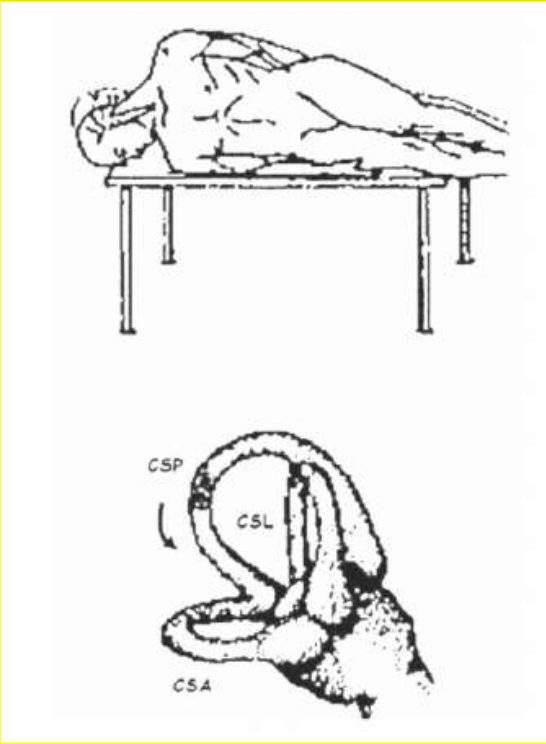
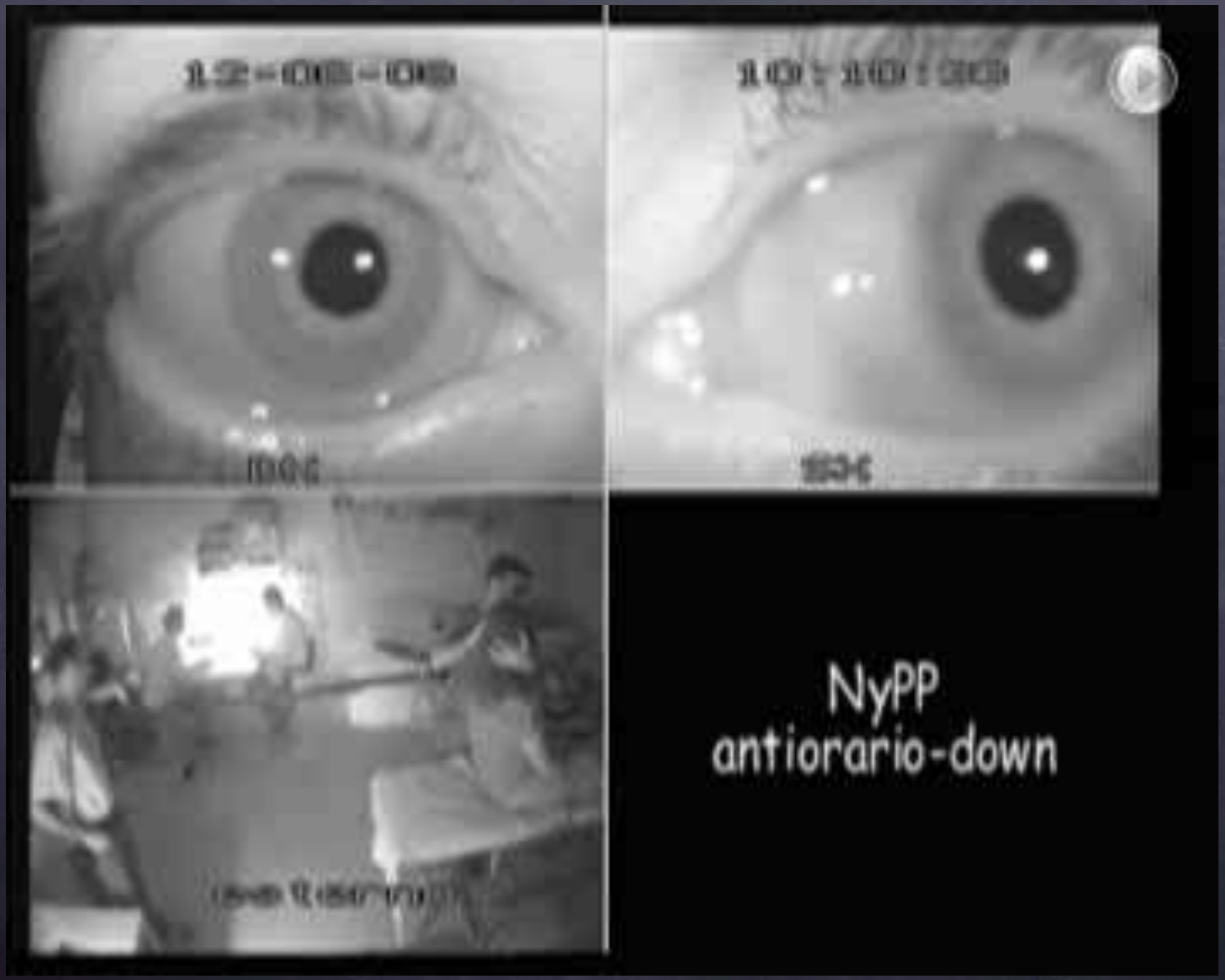


Table 1. Preliminary results of physical therapy.

	Treated patients	Successful therapy	Cured	Transformed
Total	16	11	6	5
Demi Semont	11	8	5	3
45° FPP	5	3	1	2

45° FPP, 45° forced prolonged position technique.

Control visit was programmed three days after the therapy, at most.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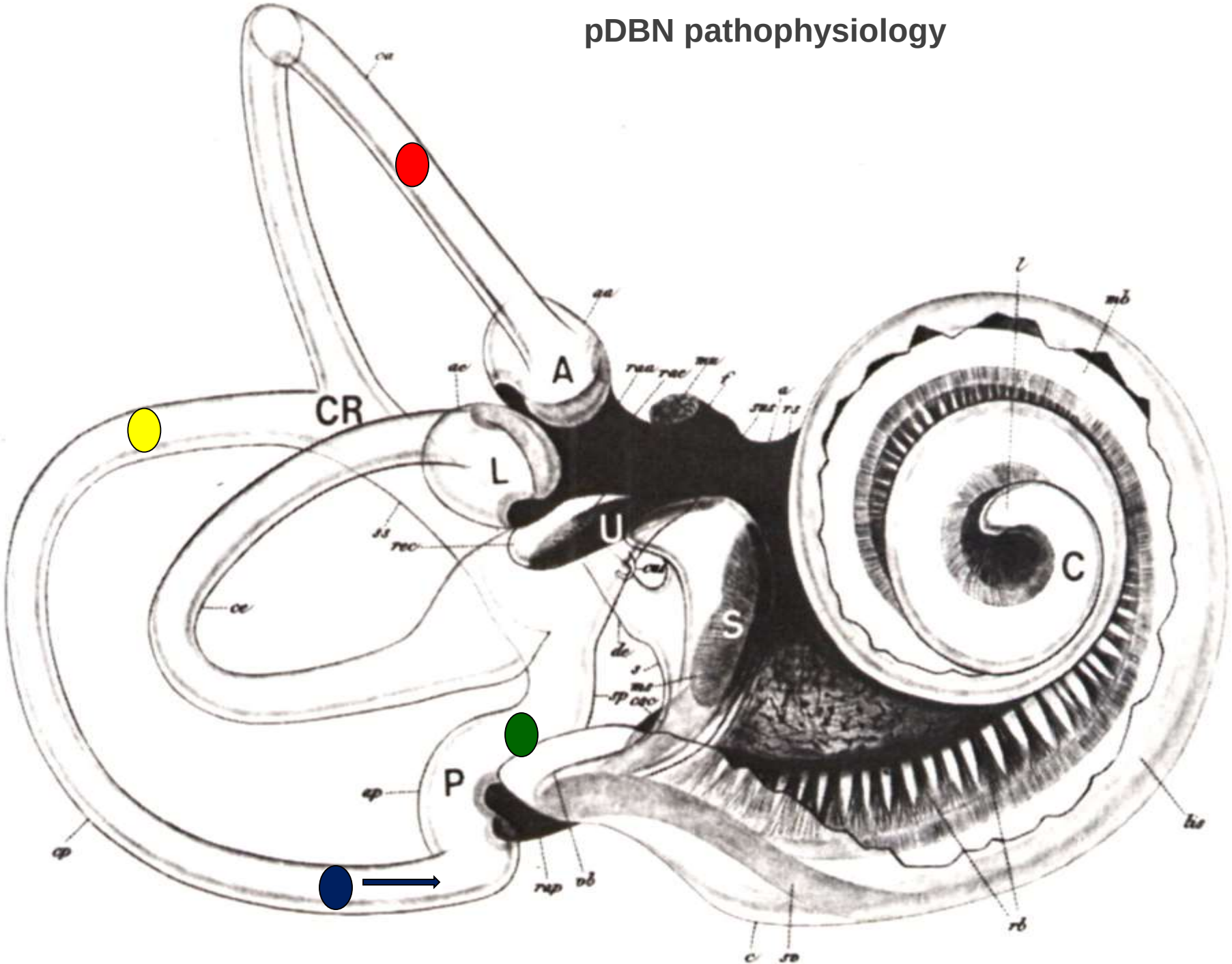
pDBN pathophysiology



THANK YOU