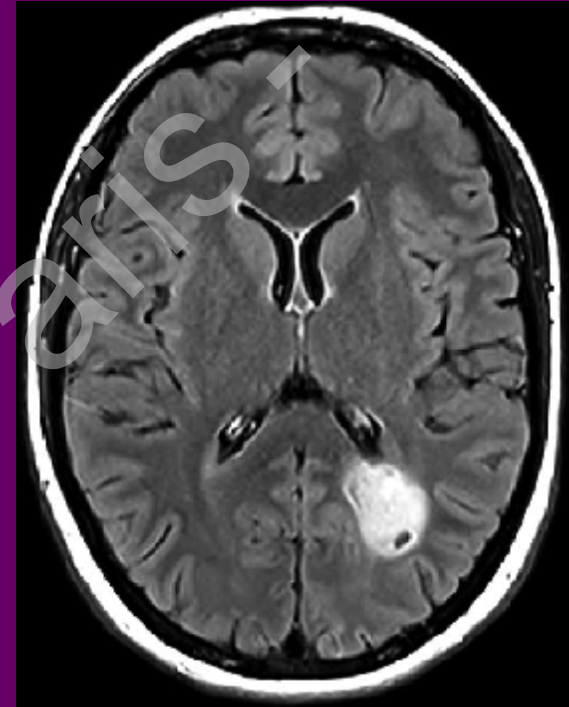


# Points importants

- Forme pseudotumorale de SEP
- Influence géotropique sur nystagmus vertical
- Tako-tsubo



# Etiologies of upbeat nystagmus

## UPBEAT NYSTAGMUS<sup>55,362</sup>

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Cerebellar degenerations and atrophies<sup>396,397,605</sup>  
Multiple sclerosis<sup>362</sup>  
Infarction of medulla<sup>601,626</sup> or cerebellum<sup>82,249</sup>  
Tumors of the medulla,<sup>362,414</sup> cerebellum,<sup>344,1308</sup> or  
midbrain<sup>830,1144</sup>  
Wernicke's encephalopathy<sup>228,362,1254</sup>  
Brain stem encephalitis<sup>399</sup>  
Behçet's syndrome<sup>558</sup>  
Meningitis<sup>521</sup>  
Leber's congenital amaurosis or other congenital  
disorder of the anterior visual pathways<sup>542,1277</sup>  
Thalamic arteriovenous malformation<sup>857</sup>  
Congenital<sup>1078</sup>  
Organophosphate poisoning<sup>582</sup>  
Tobacco<sup>1056</sup>  
Associated with middle ear disease<sup>437</sup>  
Transient finding in otherwise normal infants<sup>540</sup>

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From Leigh & Zee, *The Neurology of Eye Movements*

# Upbeat nystagmus

## 1. Localisation

- Cervelet
- Bulbe
- Pont
- Mésencéphale



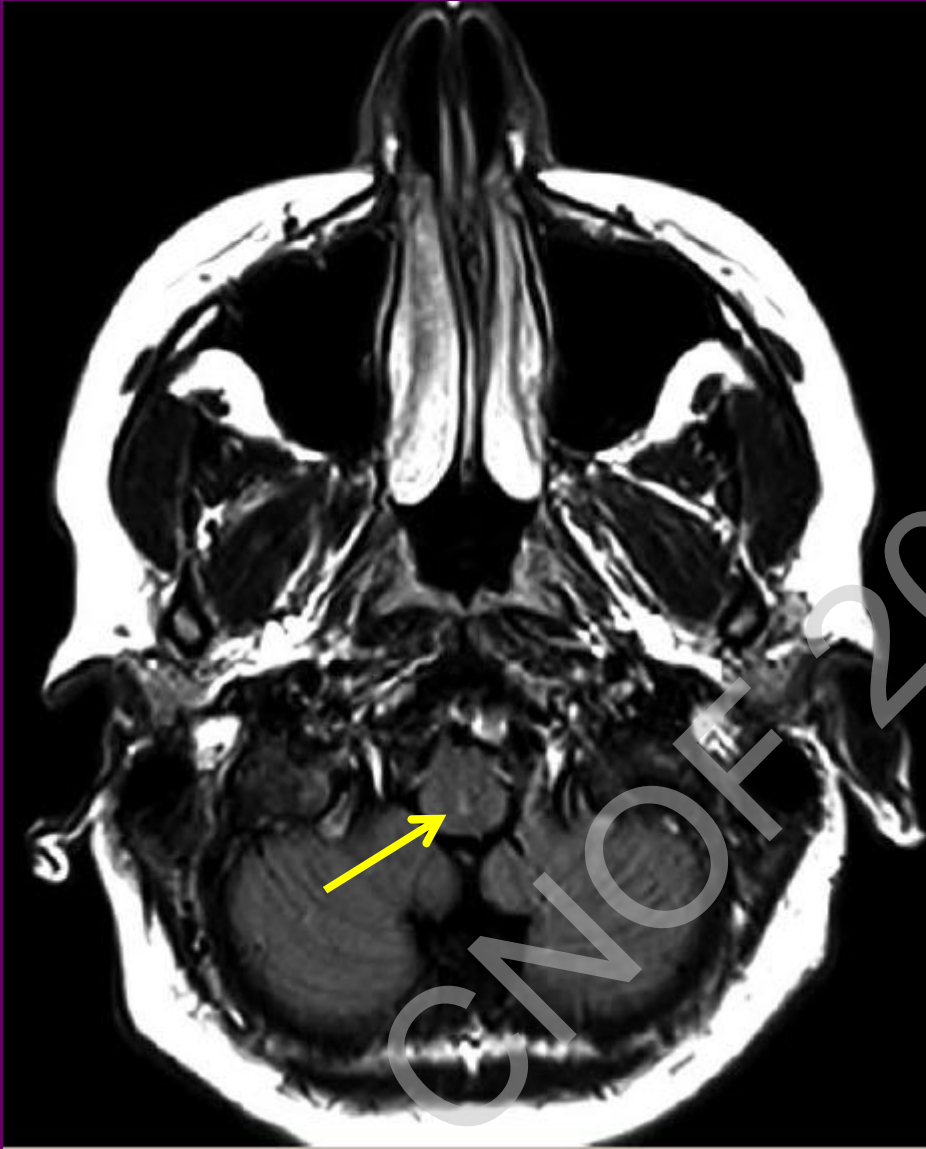
# Upbeat nystagmus

## 1. Localisation

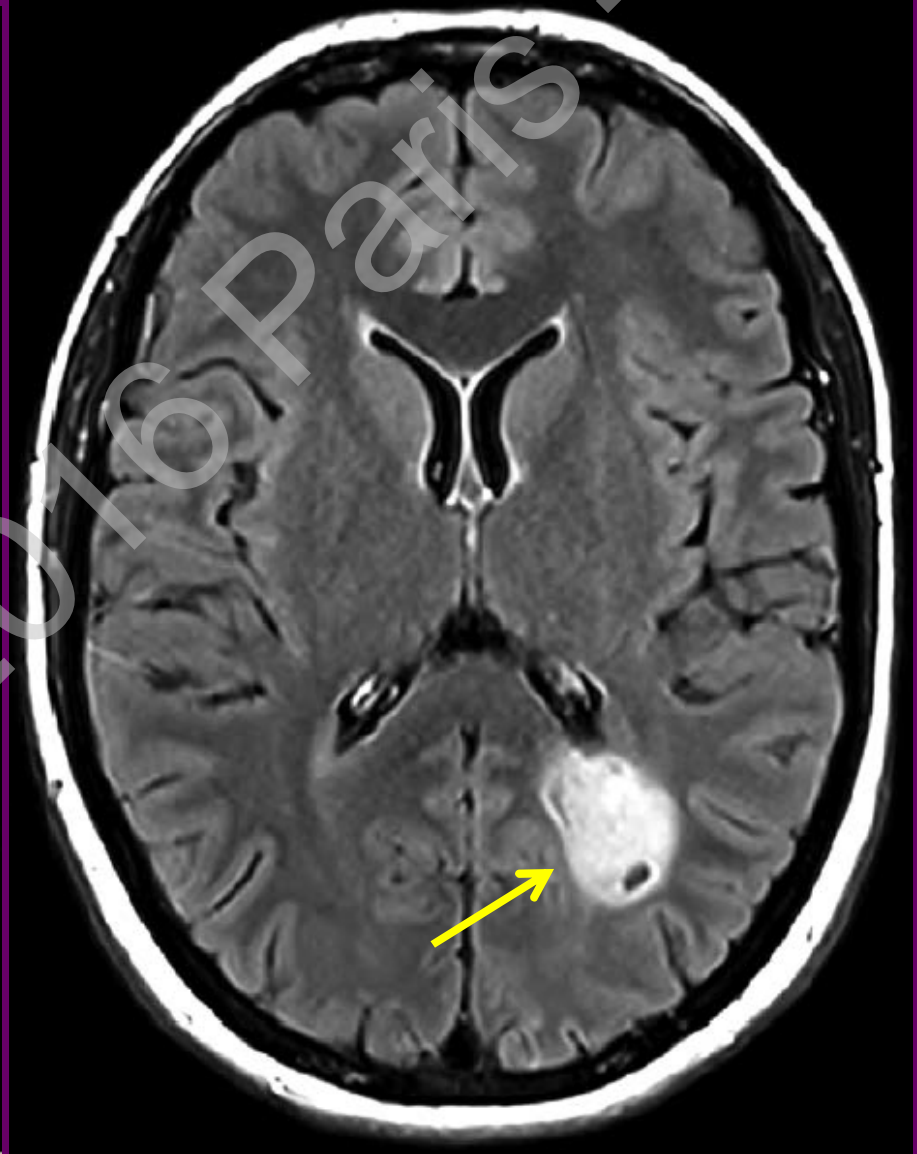
- Cervelet
- Bulbe
- Pont
- Mésencéphale

## 2. Etiologies

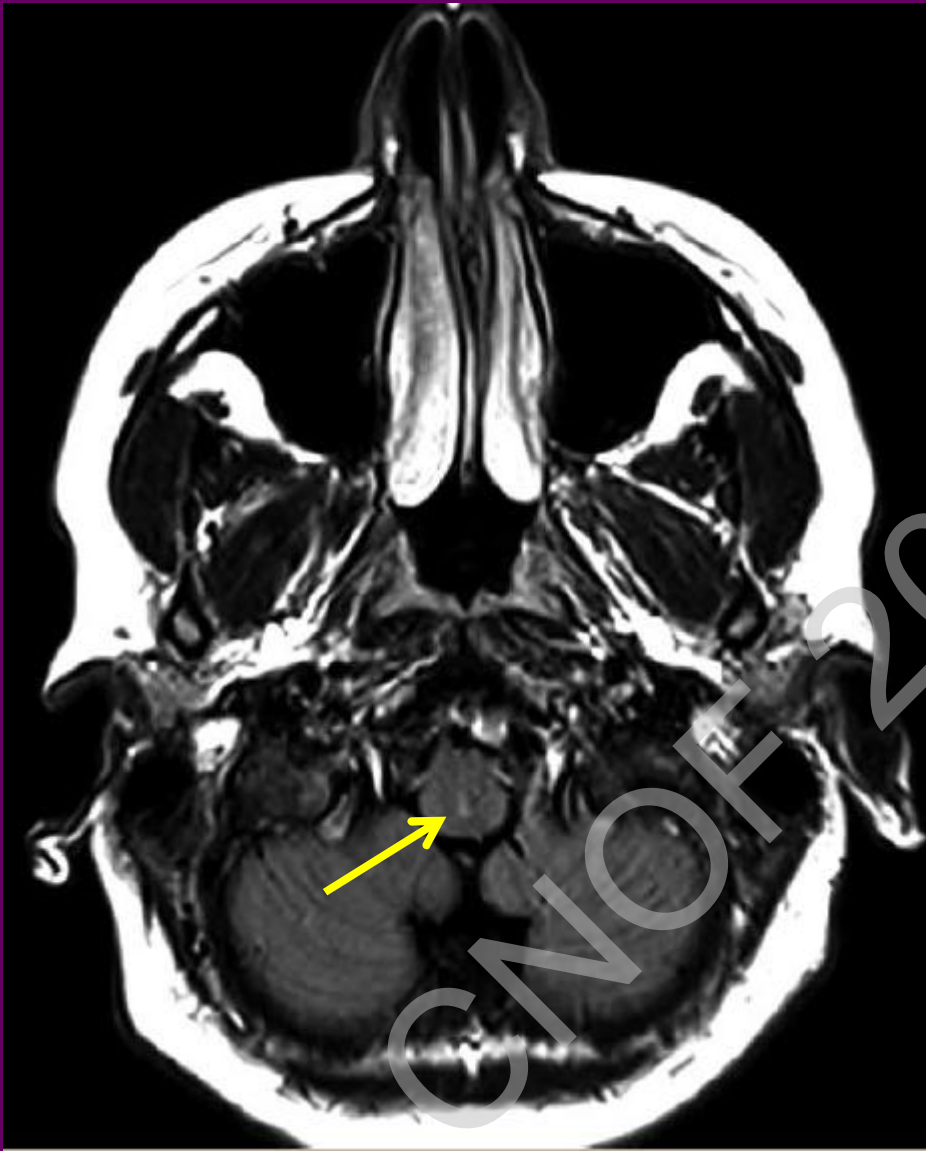
- Ischémie
- Inflammation
- Tumeur
- toxico-carentiel
  
- Transitoire  
nouveau-né sain



Lésion bulbaire

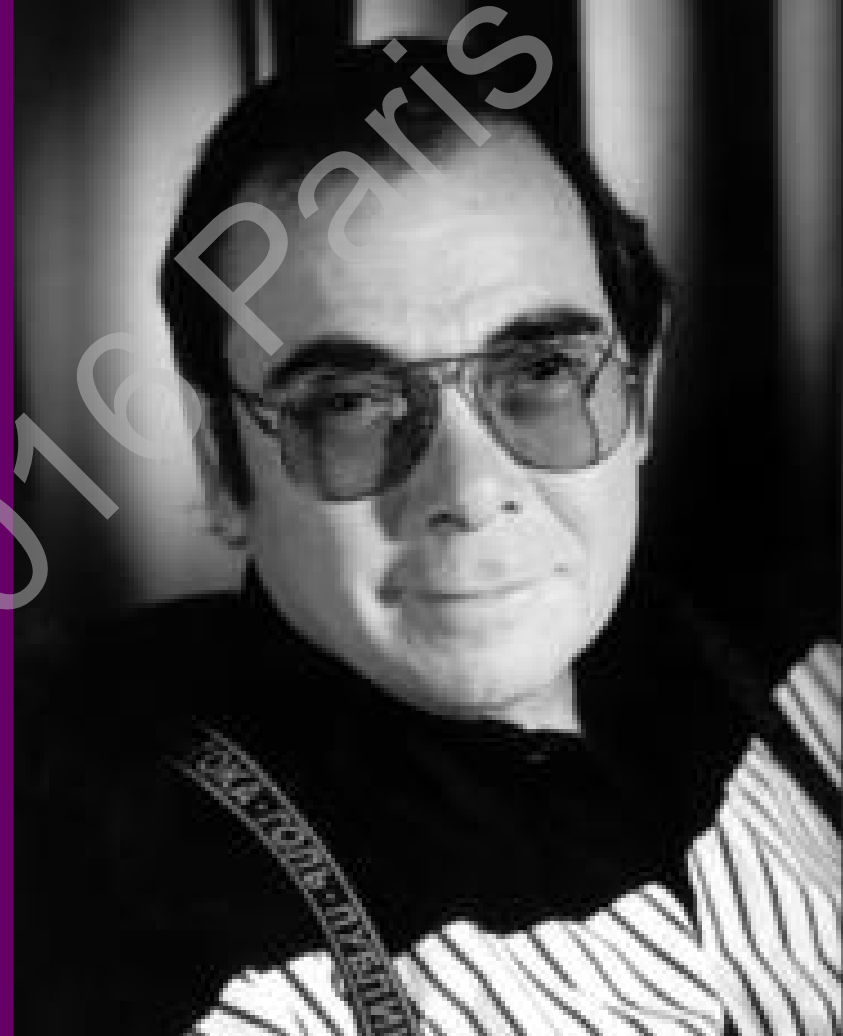


Lésion pseudotumorale





Sir Isaac Newton, 1642-1726



Marcel Gotlib, 1934-

# Gravité

$$F_g = \frac{G \cdot m_1 \cdot m_2}{r^2}$$

$F_g$  = Force d'attraction entre les corps en newtons (N)  
 $G$  = Constante de la gravitation universelle  $\approx 6,67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$   
 $m_1$  = Masse du premier objet en kilogrammes (kg)  
 $m_2$  = Masse du deuxième objet en kilogrammes (kg)  
 $r$  = Distance séparant les deux objets en mètres (m)



Sir Isaac Newton, 1642-1726



MM Gotlib, La Rubrique-à-Brac

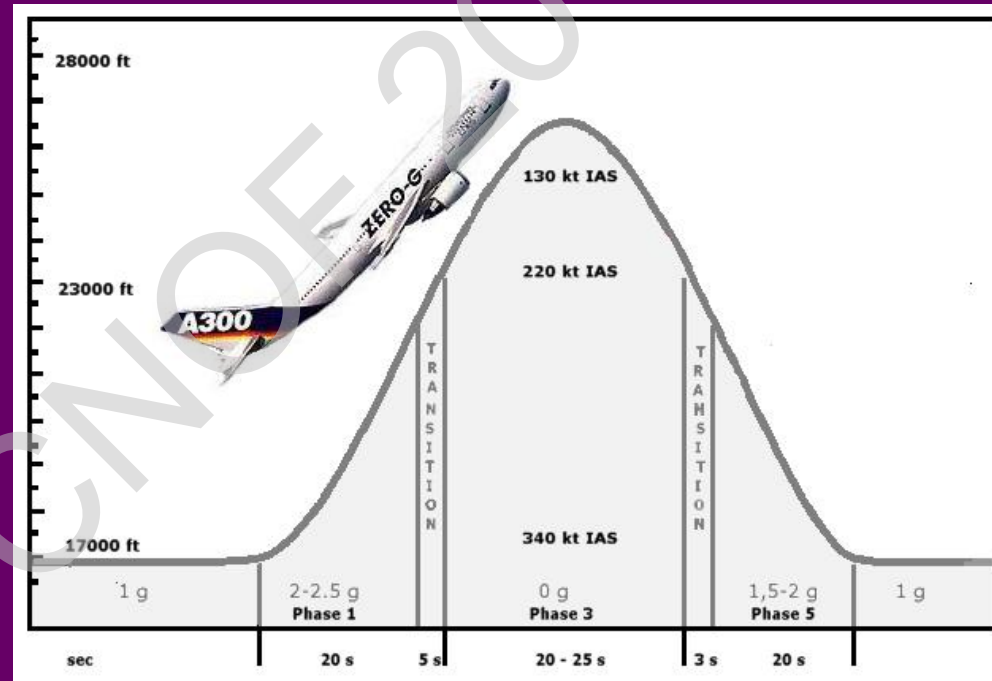


Hypergravité → upbeat nystagmus  
Hypogravité → downbeat nystagmus

3G



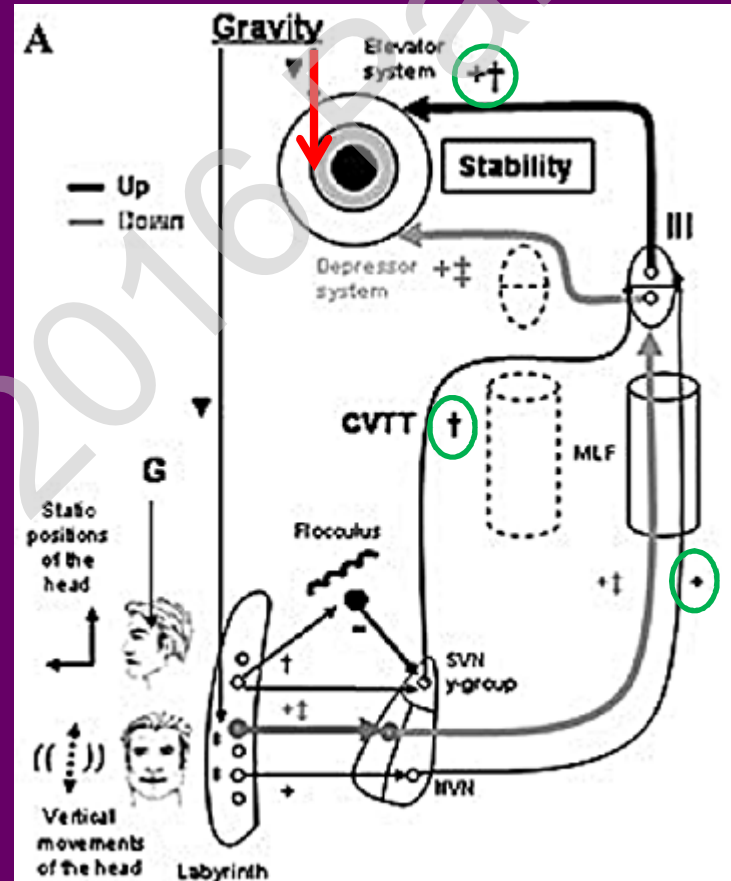
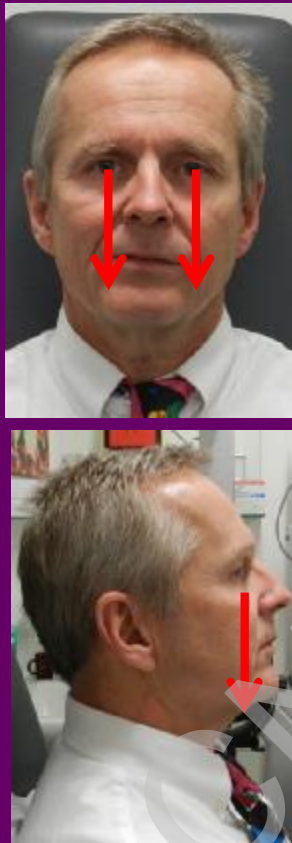
G=0



# Gravité

$$F_g = \frac{G \cdot m_1 \cdot m_2}{r^2}$$

$F_x$  = Force d'attraction entre les corps en newtons (N)  
 $G$  = Constante de la gravitation universelle  $\approx 6,67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$   
 $m_1$  = Masse du premier objet en kilogrammes (kg)  
 $m_2$  = Masse du deuxième objet en kilogrammes (kg)  
 $r$  = Distance séparant les deux objets en mètres (m)



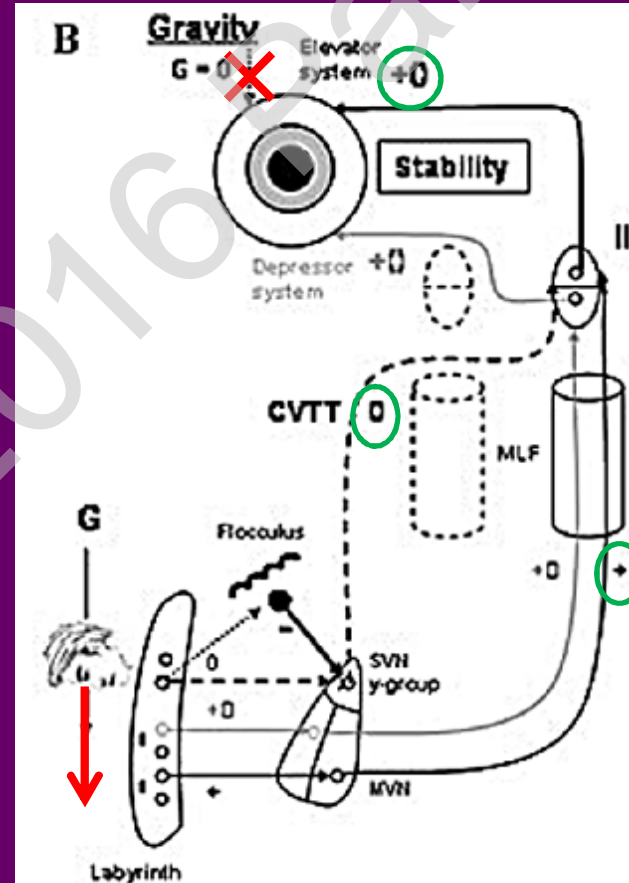
CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Gravité

$$F_g = \frac{G \cdot m_1 \cdot m_2}{r^2}$$

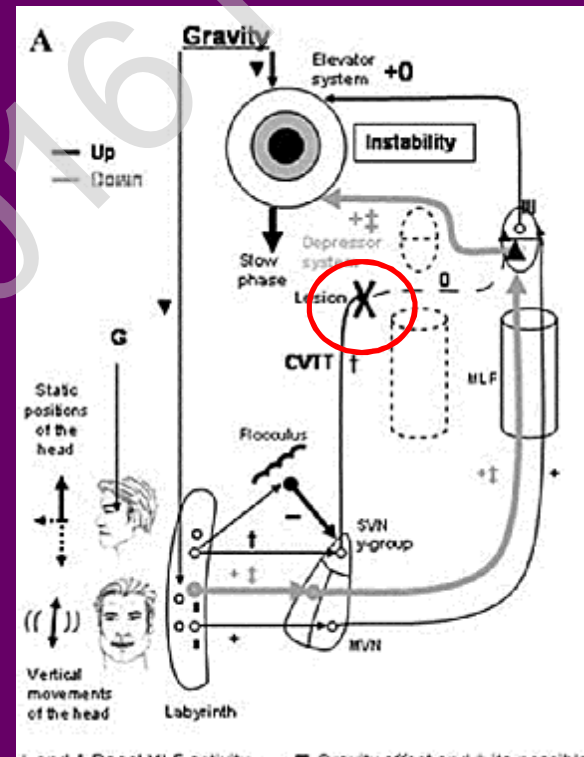
$F_g$  = Force d'attraction entre les corps en newtons (N)  
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CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

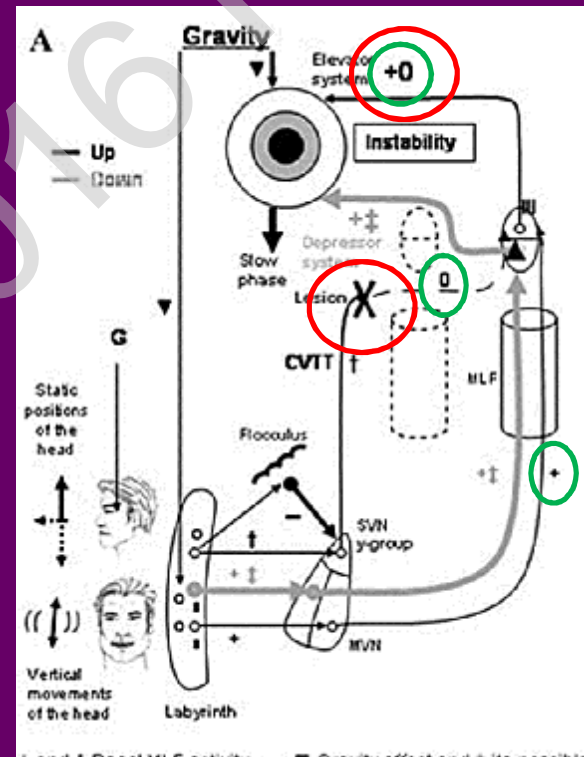
# Upbeat nystagmus – Patient 1



CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Upbeat nystagmus – Patient 1

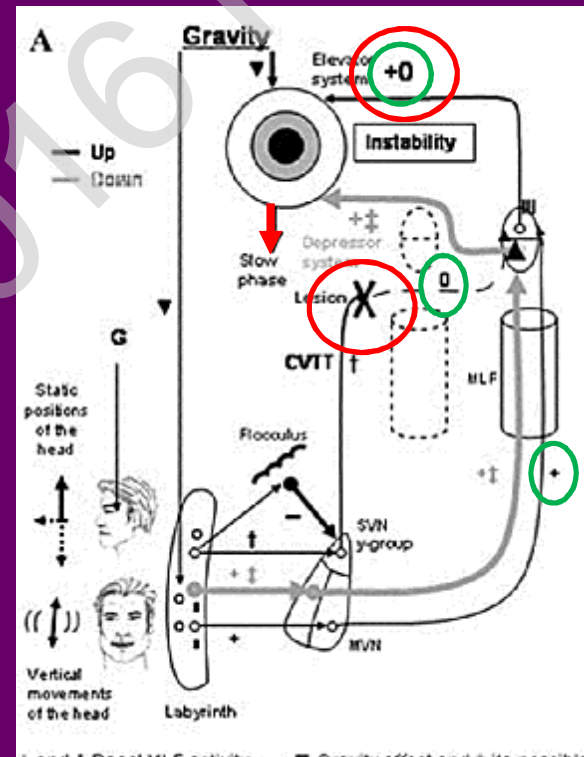


CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Upbeat nystagmus – Patient 1

- video

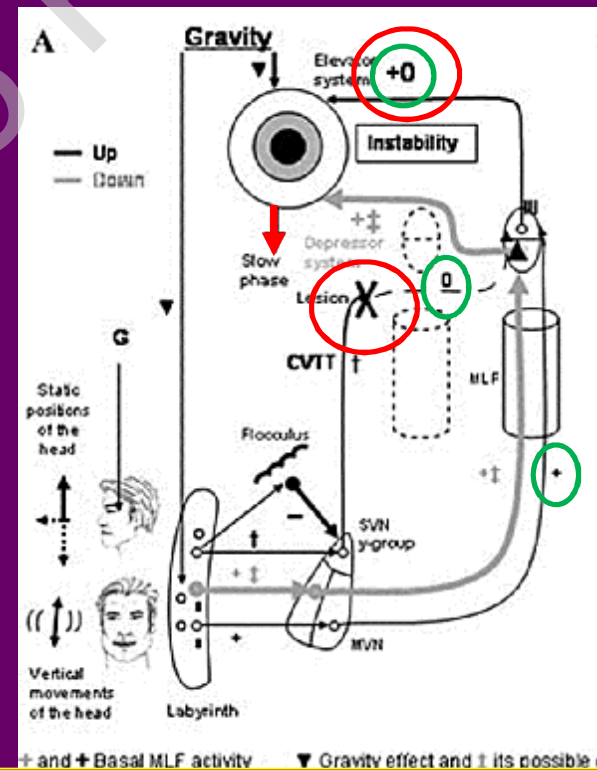


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# Upbeat nystagmus – Patient 1

- video

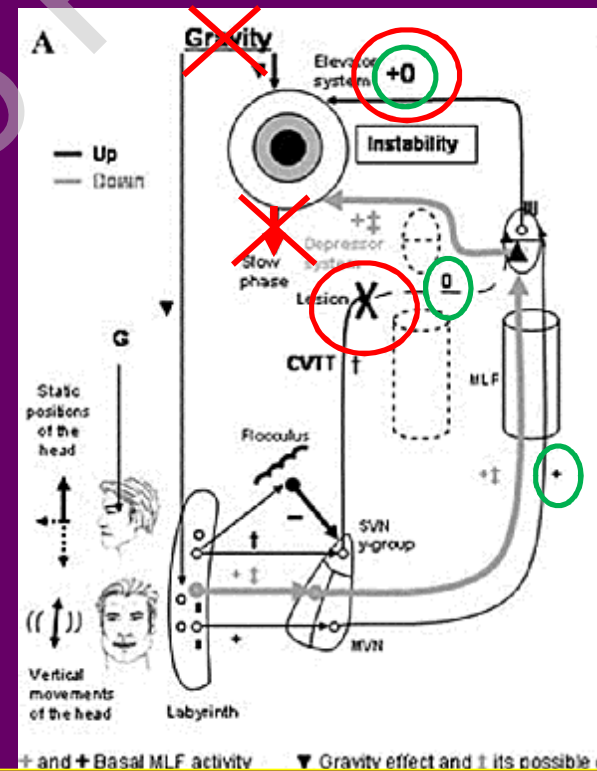


CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Upbeat nystagmus – Patient 1

- video



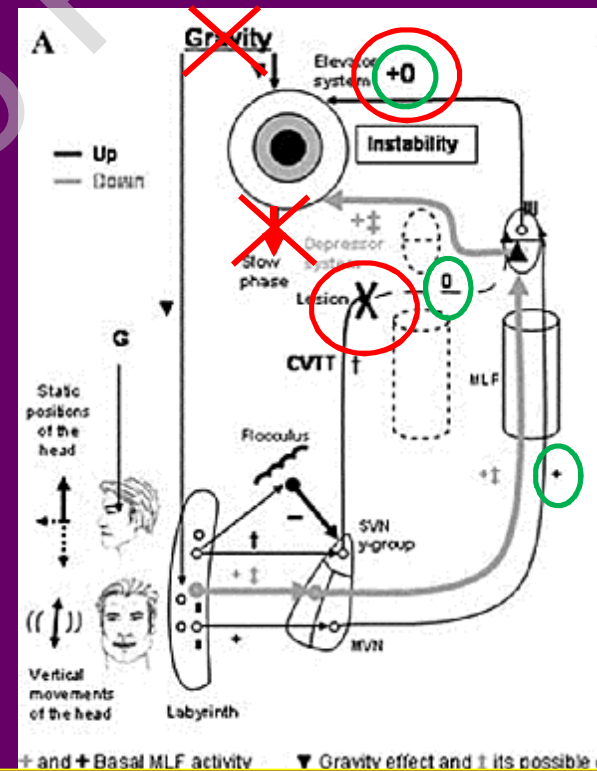
CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165



# Upbeat nystagmus – Patient 1

- video



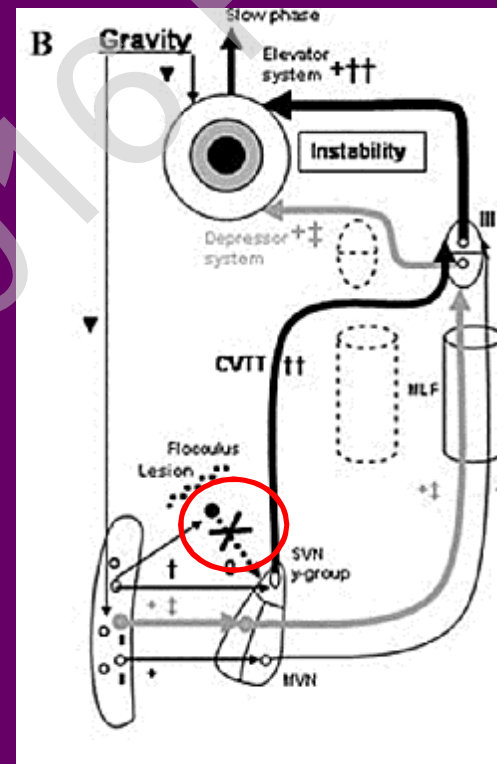
CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Patient 2

- 75 year-old man
  - Cannot work in the garden anymore !
    - «It gets dizzy»
- video

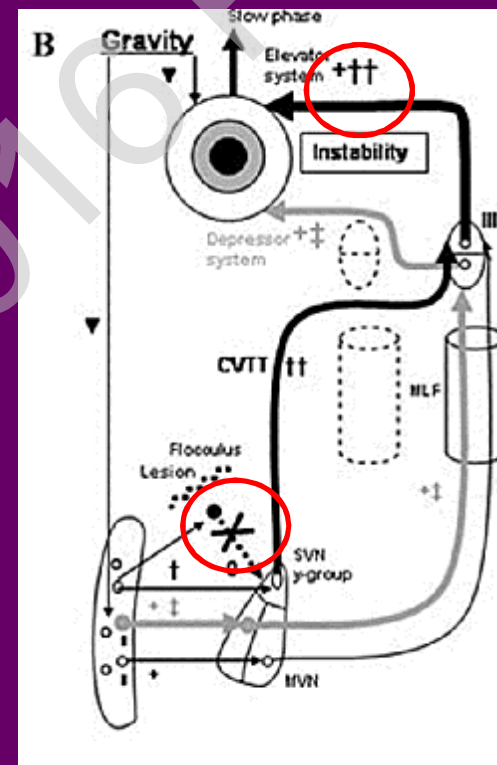
# Downbeat nystagmus – Patient 2



CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Downbeat nystagmus – Patient 2

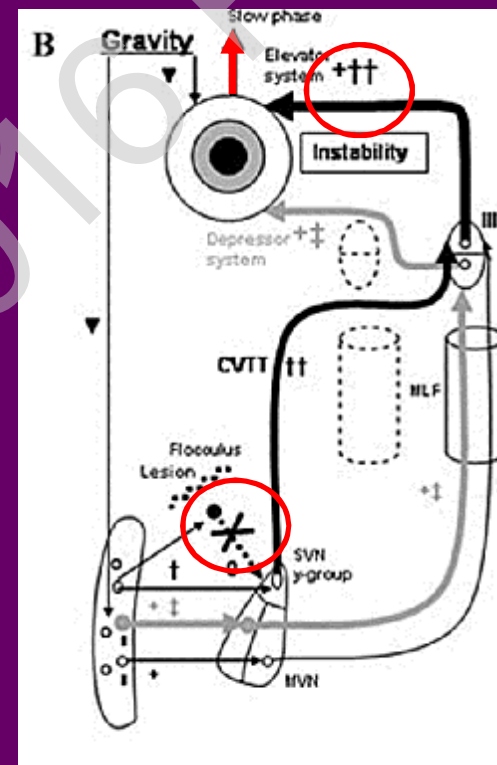


CVTT : crossed ventral tegmental tract

C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Downbeat nystagmus – Patient 2

- video

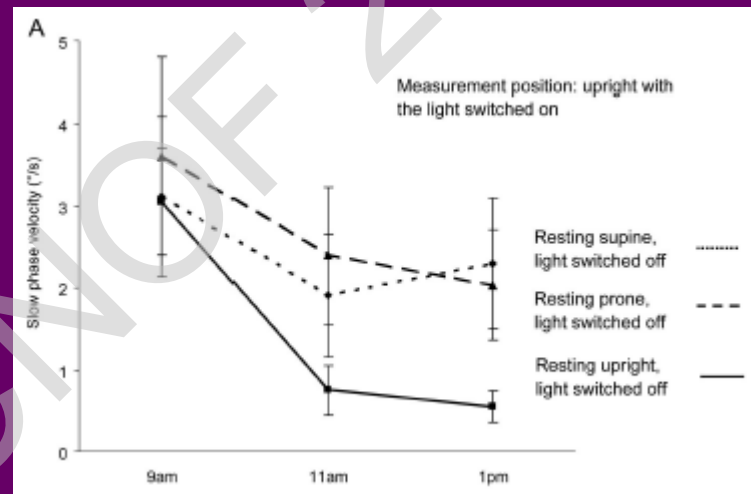


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C. Pierrot-Deseilligny. Ann Ny Acad Sci 2009;1164:155-165

# Effect of resting on DBN

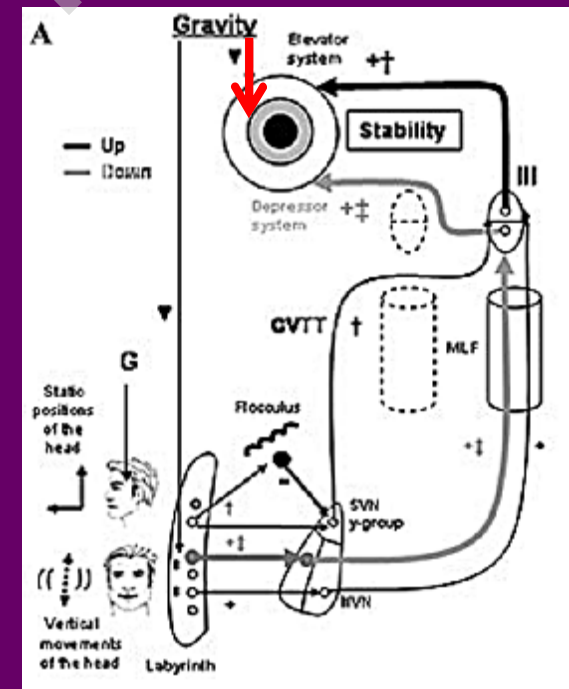
- 9 patients with DBN
  - ↓ slow phase velocity in upright ( $0.65^{\circ}/\text{sec}$ )
  - $\equiv$  in supine or prone ( $2.1$  &  $2.22^{\circ}/\text{sec}$ )



Spiegel R et al. Neurology 2010;75:1928-1932

# Vertical nystagmus

- Influenced by gravity
  - Modulation by otoliths input
- Upbeat nystagmus
  - Worse upright
- Downbeat nystagmus
  - Worse prone



# Tako-tsubo

- Medulla oblongata
  - Respiratory
  - Cardiac center
    - Sympathetic
    - Parasympathetic
  - Vasomotor centers
  - Reflex centers
    - Vomiting
    - Coughing
    - Sneezing
    - Swallowing

