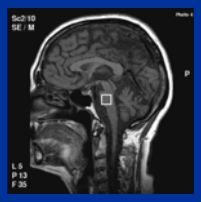
SCA1 and sleep



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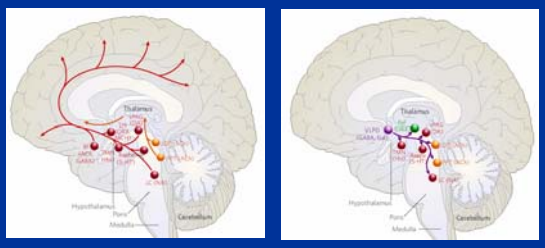
Melbourne Sleep Disorders Centre

Summary

- How sleep works
- Why people with SCA1 may get sleep problems
- Common sleep problems
  - Sleep apnea
  - Periodic limb movements
  - REM behaviour disorder
- Testing and treatment

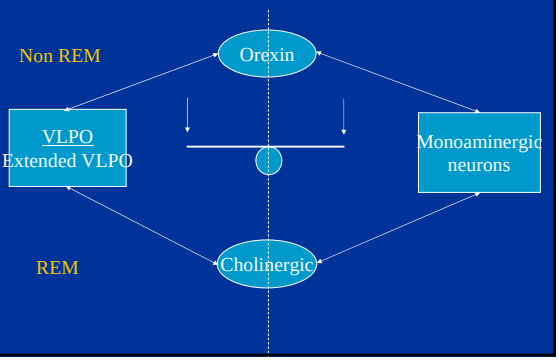
Sleep is not a passive process

Sleep and wake promoting pathways

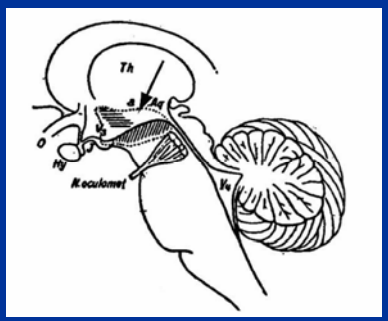


Saper et al. Nature 2005; 437: 1257-63

Sleep Regulation – Overview

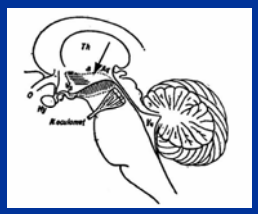


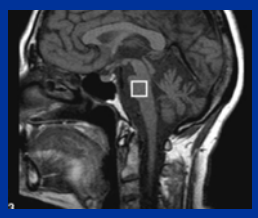
Encephalitis lethargica



Von Economo, C. J Nerv Ment Dis 1930; 71: 249-259

Encephalitis lethargica

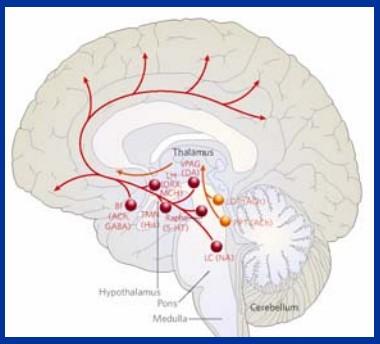




Von Economo, C. J Nerv Ment Dis 1930; 71: 249-259

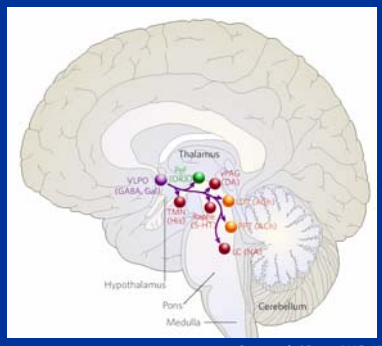
Guerrini et al. Brain 2004; 127: 1785-95

Wake-promoting pathways



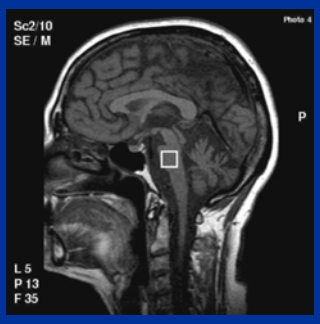
Saper et al. Nature 2005; 437: 1257-63

Sleep-promoting pathways



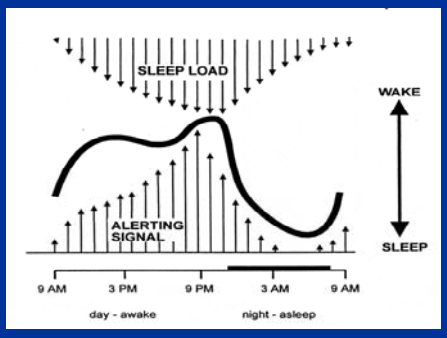
Saper et al. Nature 2005; 437: 1257-63

SCA1 and brain changes



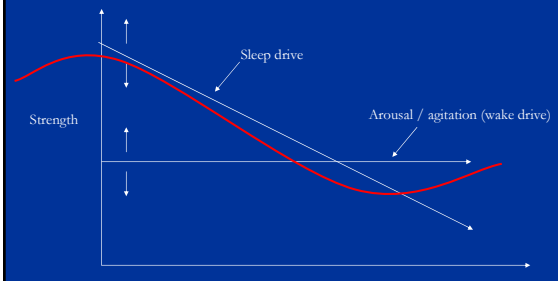
Guerrini et al. Brain 2004; 127: 1785-95

Sleep-wake regulation: 2 process model

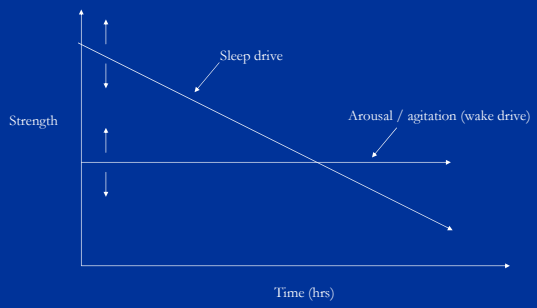


Borbely & Achermann. J Biol Rhythms 1999; 14: 569-73

Sleep like a baby

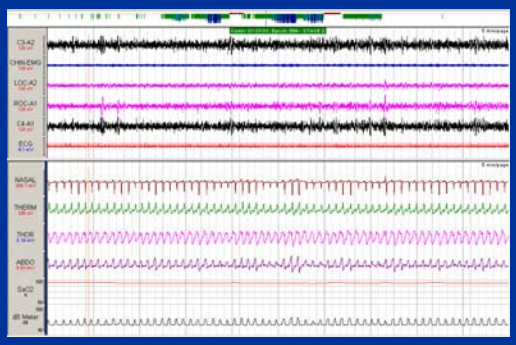


Sleep like a baby



Sleep laboratory

Sleep study data



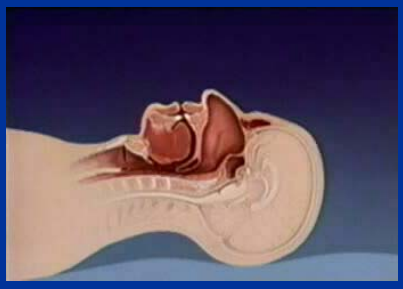
Obstructive sleep apnea (OSA)

- Recurrent sleep disruption due to airway obstruction
- Common symptoms
  - Snoring
  - Gasping / choking during sleep
  - Sleepiness through the day

Who gets OSA?

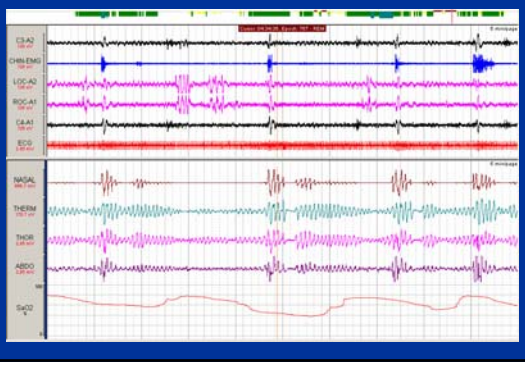
- Obesity is the most important risk factor
- Males more than females (pre-menopausal)
  - Males = females (after menopause)
- Neurological problems
  - Poor co-ordination between breathing in and muscle contraction in the tongue and upper airway

OSA – How does it occur?



OSA

OSA



CPAP treatment for OSA

Oral appliances

Periodic limb movements

- Repetitive stereo-typical movements during sleep
- Very common as a PSG finding – 30% >70yo
- Restless legs syndrome
  - Symptom defined syndrome
- Increased by
  - Peripheral neuropathy
  - Fe deficiency
  - Neurodegenerative disorders

Periodic limb movements

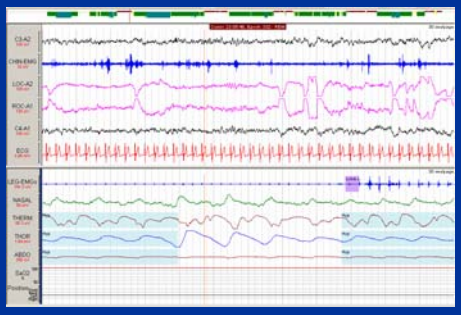
Periodic limb movements

REM behaviour disorder

- Purposeful acting out of dreams
- Movements arise from REM
- Loss of Ach mediated suppresion of motor tone
- Common in
  - Elderly
  - Anti-depressants
  - Neurodegenerative disorders

REM behaviour disorder

REM behaviour disorder



Summary

- Sleep and wake are both regulated by the brain
- In conditions such as SCA1 expected sleep problems include:
  - Excessive sleepiness (too sleepy)
  - Insomnia (can't sleep)
  - Abnormal movements during sleep
    - Periodic limb movements
    - REM behaviour disorder
  - Obstructive sleep apnea

Resources

www.sleep.org.au	Australasian sleep association
www.sleepoz.org.au	Sleep Disorders Australia
www.sleepfoundation.org	National sleep foundation (USA)
www.aasmnet.org	American Academy of Sleep Medicine
www.sleepeducation.com	Patient resources (AASM)

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