SLEEP APNEA IN THE ELDERLY

SLEEP THAT KNITS UP THE RAVELED SLEEVE OF CARE

OBJECTIVES

1. TO DESCRIBE THE NORMAL AGE –RELATED CHANGES TO SLEEP
2. TO DESCRIBE THE SPECTRUM OF SLEEP-DISORDERED BREATHING.
3. TO CLARIFY THE METHODS AVAILABLE FOR MEASURING SLEEP-DISORDERED BREATHING IN THE SLEEP LAB AND AT HOME.
4. TO OUTLINE THE SPECIAL FEATURES OF SLEEP-DISORDERED BREATHING IN THE ELDERLY.
5. THE RELATIONSHIP BETWEEN SLEEP-DISORDERED BREATHING AND OTHER SLEEP DISORDERS IN THE ELDERLY.

HOW DOES SLEEP ARCHITECTURE DIFFER IN THE ELDERLY

- 1. Circadian patterns:Tendency towards sleep phase advance
- 2. Depth of sleep : less slow wave sleep, more time awake after sleep onset, greater sleep fragmentation.
- 3. Less total nocturnal sleep time, partly due to increased daytime napping

SLEEP HOMEOSTASIS

- Process “S”…the more the individual is sleep-deprived the greater the drive to sleep (a cardinal rule is to target the wake-up time)
- Potential role of adenosine in the basal forebrain (caffeine is an adenosine receptor antagonist!)

CIRCADIAN RHYTHM

Process “C”

Circadian=“about a day”

Free-ranging adults have a sleep/wake cycle of about 25.2 hours

This pattern is said to be “entrained” to 24 hours per day by “zeitgebers” the strongest of which is light (dawn and dusk)but also meal time, exercise, social interaction and schedules can play a role

At certain times of the day sleep is more or less likely despite the history of prior sleep

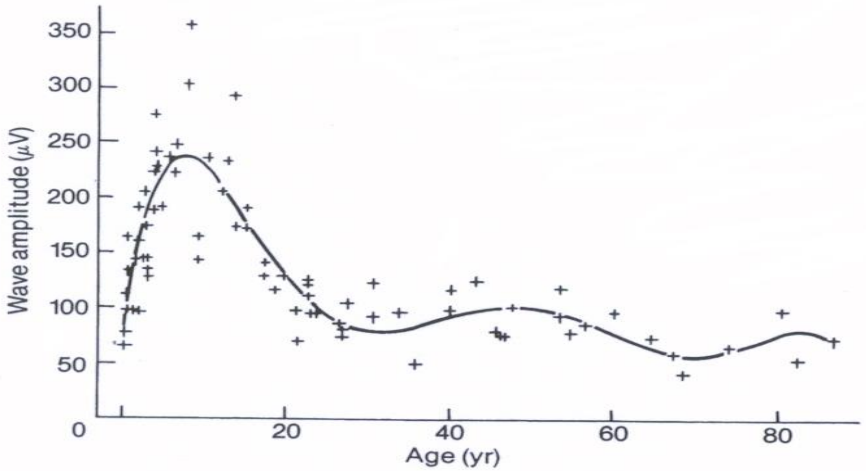
NORMAL “AGE OF MAN “ CHANGES TO CIRCADIAN RHYTHMS

- Newborn
- Teenager : Sleep phase Delay
- Elderly :Sleep phase advance

WHAT CHANGES WITH AGE?

Process “s”…probably not

- Process “c”… definitely yes
- A decrease in the amplitude and earlier timing of the melatonin rise leads to the sleep phase advance
- Adaptation to change is less flexible



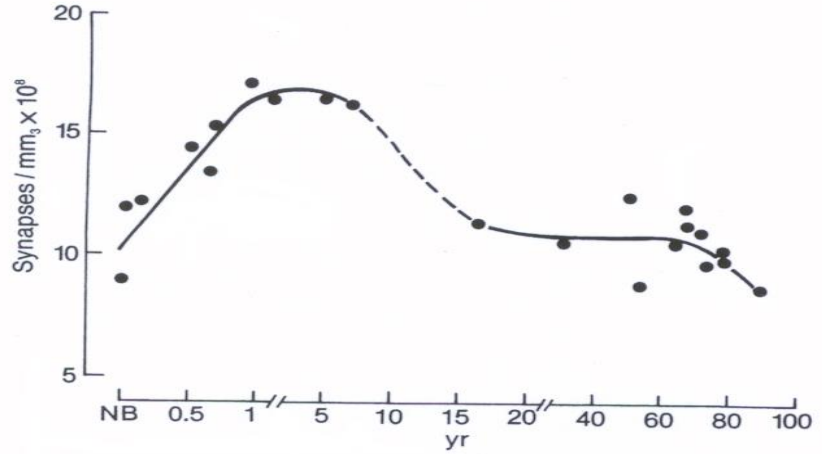


Figure 2–8. These graphs illustrate age-related changes in human EEG amplitude and in cortical synaptic density. Although relatively few data points were used to produce the lower curve, Feinberg[19] suggested that the decline in EEG amplitude during adolescence, which is most remarkable during sleep, is causally linked to a "programmed" thinning of synaptic density in the cortex. (Reprinted from Journal of Psychiatric Research, vol. 17, Feinberg I, Schizophrenia: caused by a fault in programmed synaptic elimination during adolescence?, 319–334, Copyright 1983, with permission from Elsevier Science.)

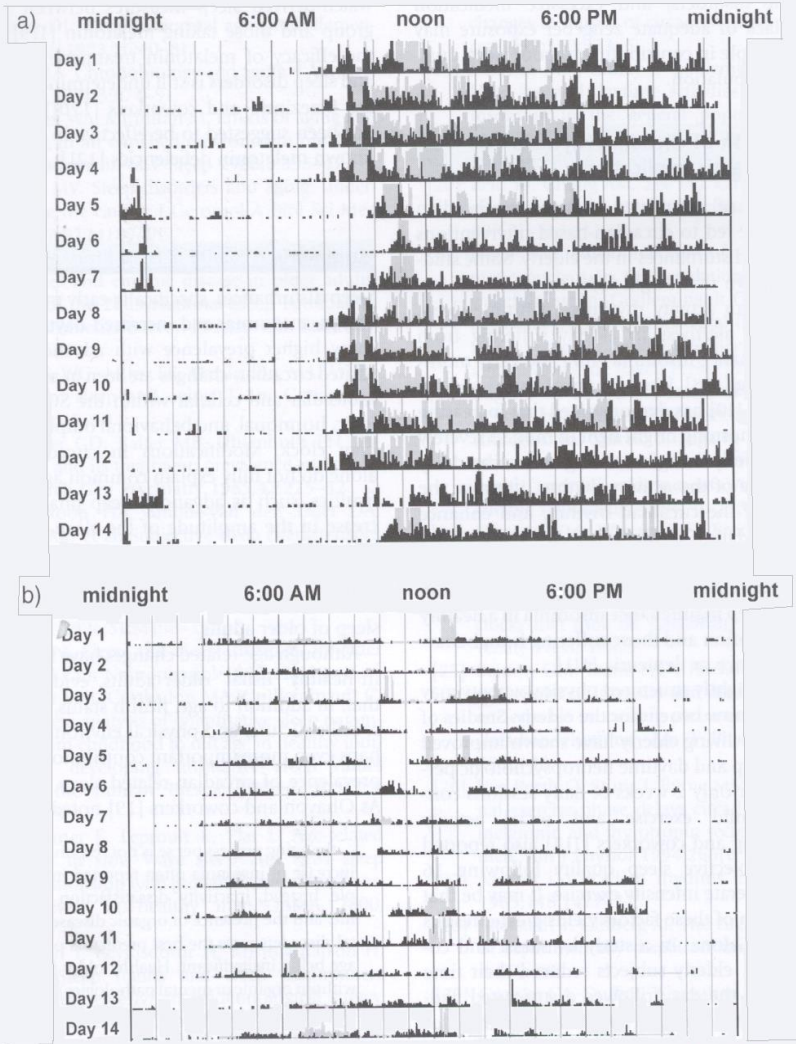


Fig. 2. Wrist activity recording and daily light exposure from a young (27 year old) (*A*) and an old (75 year old) (*B*) subject. Black bars represent activity counts and gray bars represent light exposure. Both the young and old subjects are plotted on identical scales. The activity rhythm and daily light exposure in the elderly subject is significantly reduced, whereas daily activity onset shows a notable advance.

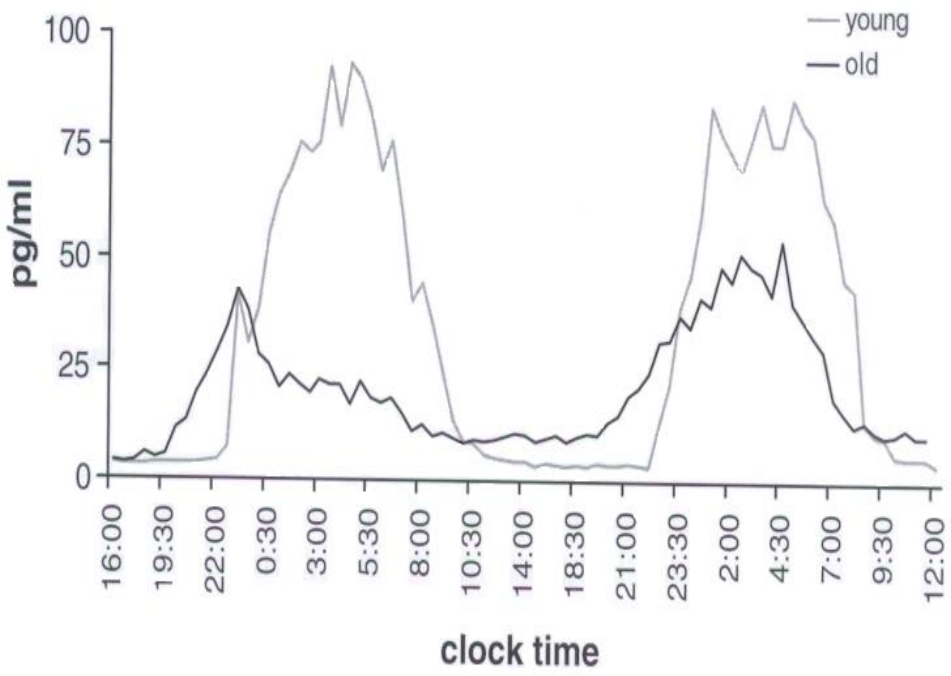


Fig. 1. Plasma melatonin rhythm collected at 30-minute intervals over a 44-hour period from a young (27 year old) subject (*shown in gray*) and old (63 year old) subject (*shown in black*). Melatonin amplitude is reduced and the phase of melatonin onset is advanced in the elderly subject.

CHANGES IN SLEEP ARCHITECTURE WITH AGE

- DECREASE IN SLEEP EFFICIENCY AND INCREASE IN WAKE AFTER SLEEP ONSET
- DECREASE OR ABSENCE OF SLOW WAVE SLEEP (less in women)
- AROUSALS FROM SLEEP INCREASE MARKEDLY WITH AGE
- PROFOUND INCREASE IN INTERINDIVIDUAL VARIABILITY
- INCREASED NAPPING IN THE DAYTIME

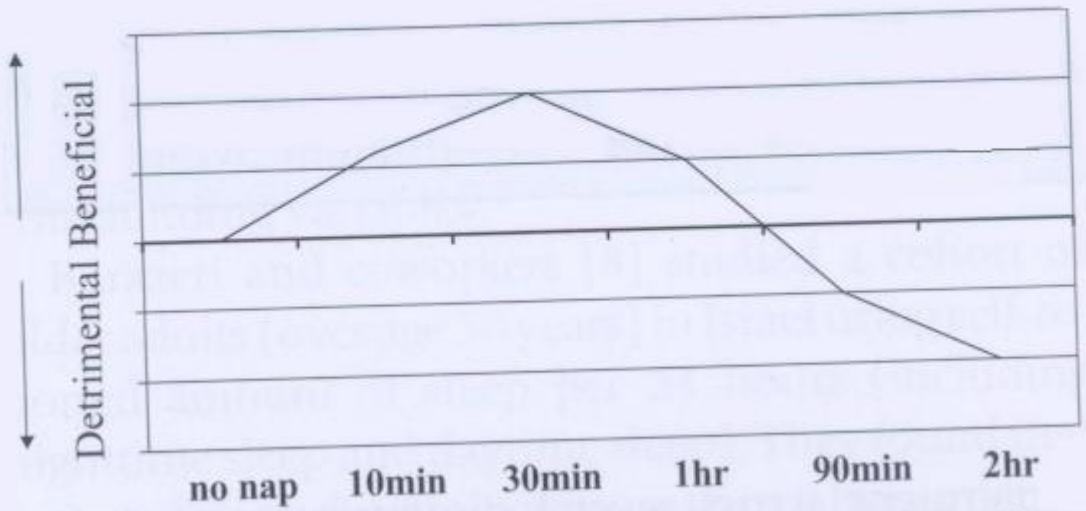


Fig. 1. The hypothetical relationship between duration of napping and overall impact on older adults. Although short naps may provide some benefit in terms of increased alertness, longer naps are more likely to result in sleep inertia and to interfere with the duration and quality of nighttime sleep.

EFFECT OF NORMAL AGE RELATED CHANGES ON THE SLEEP HISTORY

1. PERCEPTION OF POORER QUALITY AND QUANTITY OF SLEEP
2. PERCEPTION OF GREATER DAYTIME TIREDNESS IF NOT SLEEPINESS.
3. GREATER OPPORTUNITY FOR AND PROPENSITY FOR NAPPING

SPECTRUM OF SLEEP-DISORDERED BREATHING

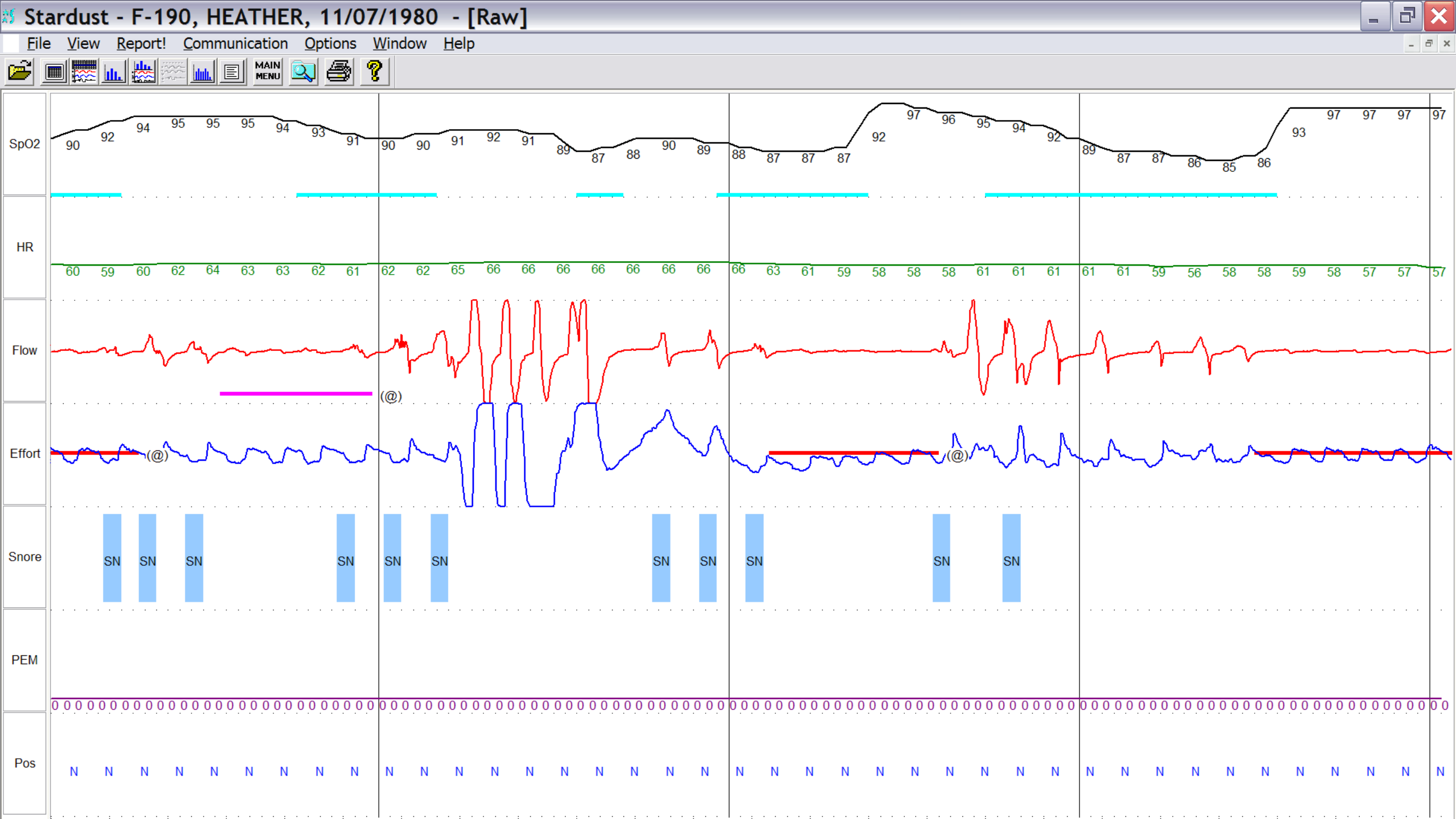
1.OBSTRUCTIVE SLEEP APNEA

2. CENTRAL SLEEP APNEA 2 TYPES

3. UPPER AIRWAYS RESISTANCE SYNDROME

SLEEP LAB AND HOME TESTING

HOME PORTABLE MONITORING IS AVAILABLE FOR TESTING FOR SLEEP-DISORDERED BREATHING BUT IS NOT COVERED UNDER MOH AS YET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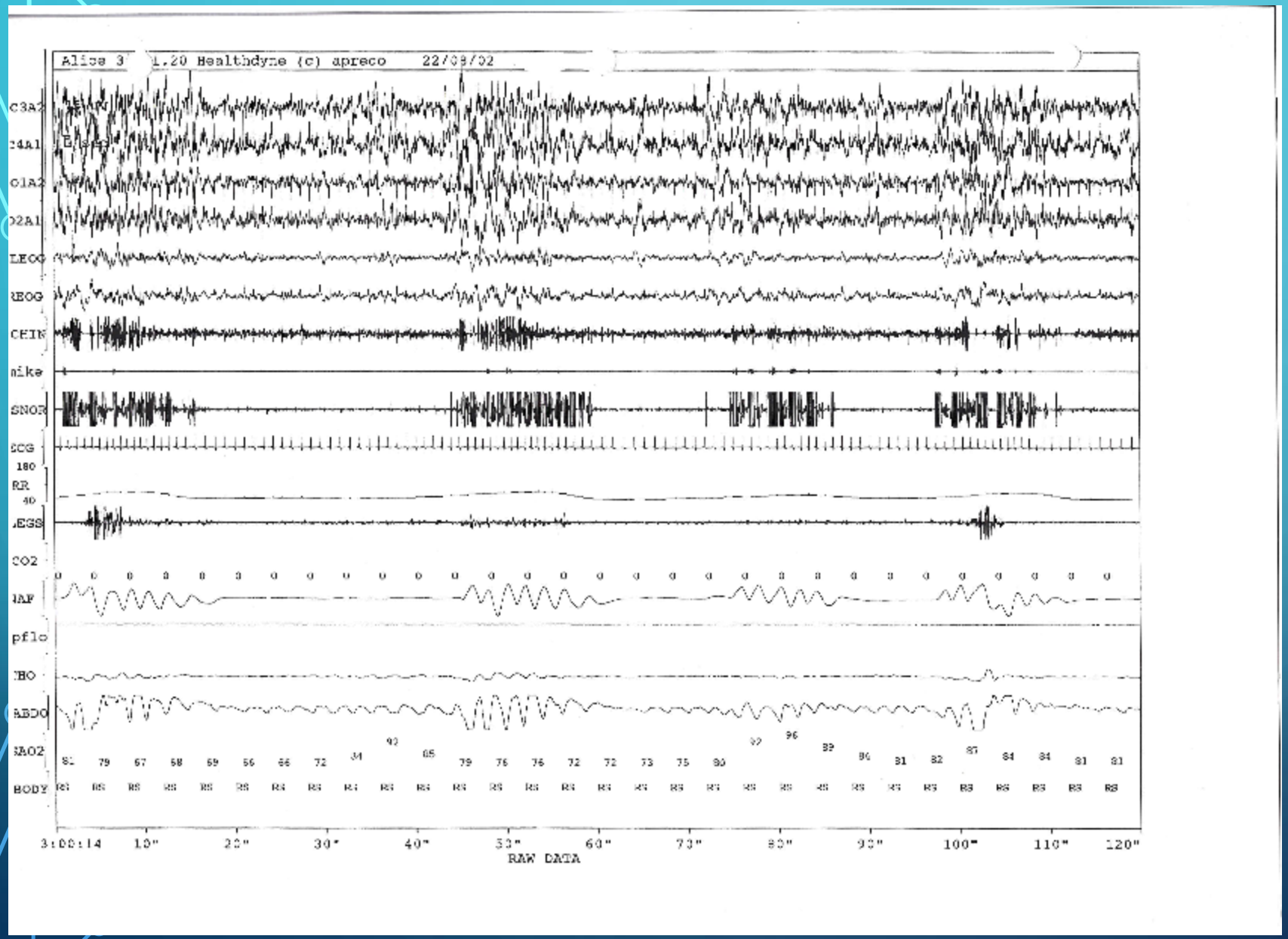
CENTRAL SLEEP APNEA

1. CHEYNE-STOKES RESPIRATION CAN BE CAUSED BY CHF , OR CVA OR CAN BE IDIOPATHIC
2. CENTRAL APNEAS NOT CSR: NARCOTICS, CNS, OR IDIOPATHIC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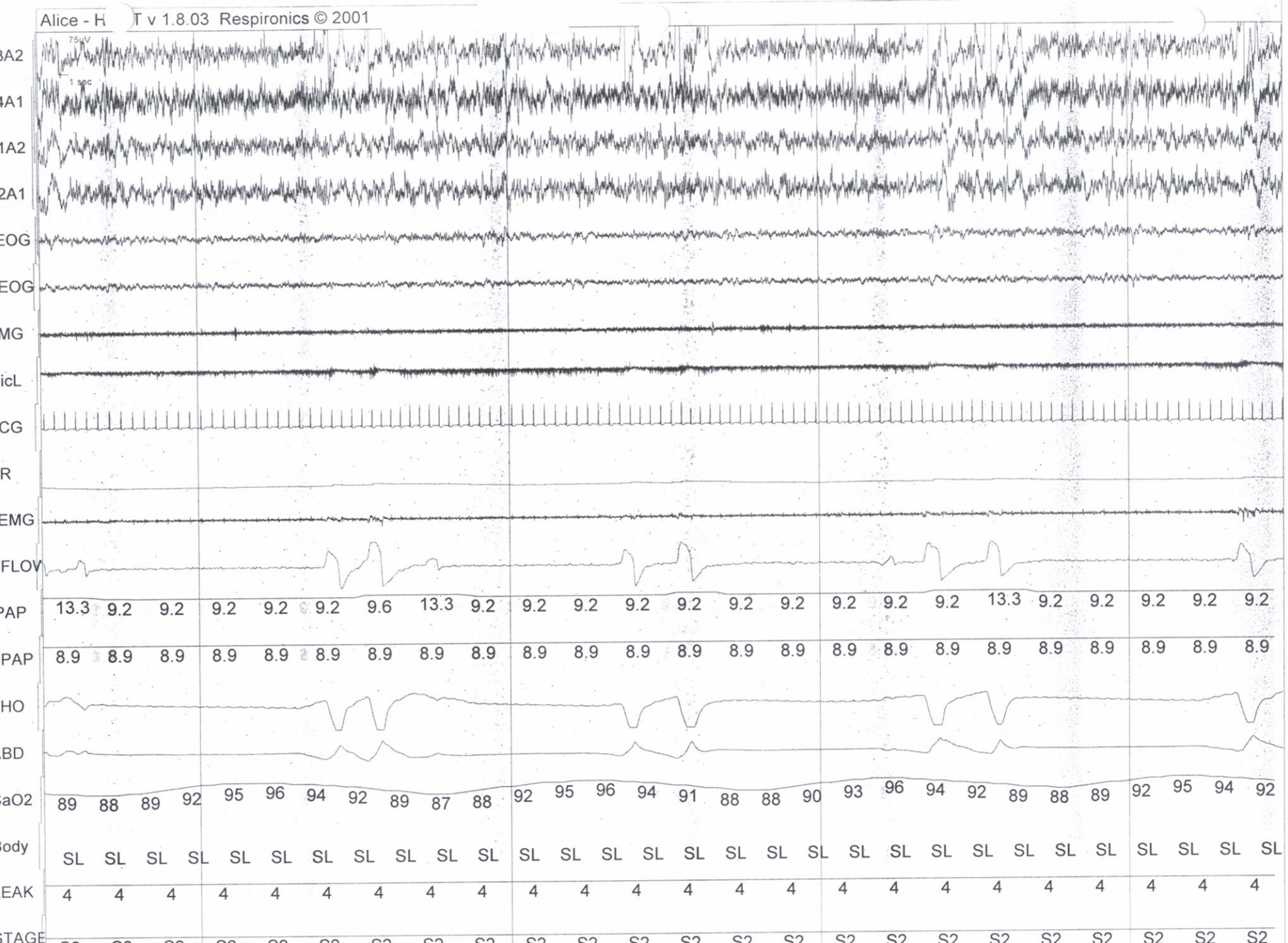
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DIFFERENCES IN THE ELDERLY

1. IMPACT OF DAYTIME SLEEPINESS.
2. GREATER PREVALENCE OF CENTRAL EVENTS
3. DIFFERING GOALS OF PATIENTS, DIFFERING WILLINGNESS/ABILITY TO TOLERATE OR EVEN PAY FOR POSITIVE PRESSURE THERAPY

CONSEQUENCES OF OBSTRUCTIVE SLEEP APNEA IN THE ELDERLY

- 1. Data on increased risk of MI and stroke are in middle aged adults for severe OSA only.
- 2. Concentrate on possibility of improved daytime functioning, fall prevention if very sleepy.

THERAPY OTHER THAN POSITIVE PRESSURE / MANDIBULAR ADVANCEMENT DEVICE

1. POSITIONAL THERAPY: ON SIDE AND ELEVATION; USE OF BODY PILLOWS
2. AVOIDANCE OF HS ALCOHOL OR SEDATION (BENZO'S)
3. TONGUE RETAINING DEVICE
4. WEIGHT CONTROL

SLEEP APNEA AND COGNITIVE FUNCTION

- 1. Reversible (?)Impaired cognitive function with OSA … data from younger age groups.
- Acceptability of CPAP in the elderly… can we promise it will help or slow the dimunition of cognitive function?
- Driving influence

RELATIONSHIP OF SLEEP APNEA AND OTHER SLEEP DISORDERS.

REM BEHAVIOR DISORDER

RESTLESS LEGS AND PERIODIC LIMB MOVEMENT DISORDER

“INSOMNIA”