Sleep Disordered Breathing in the Elderly-OSA to treat or not to treat?

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Somnomed Symposium, Arnheim 2017

Literature for this talk


What are we talking about?

In the northern EU and Japan in 2030 every other person will be older than 60!
This means 41 million people in Germany and 8 million in the Netherlands.

Who are we talking about?

The international literature defines elderly as older than working age = 64y
Should we still do this?
German public healthcare insurance defines geriatric as > 70y.
Where is the clinical border line of SDB in the elderly?

The clinical decision on impact of SDB in the elderly is depending on our goals of QoL and physical wellbeing in the elderly patient group.

And this is also the marker between physiology and pathology.

Or, when should we start with treatment?

(Empirical) Facts? The difficulty to draw the line

- Elderly is defined as > 65yrs of age, but there are major differences in the shape of SDB and clinical impact between the best ager group and the group above 80.

- There is a lower loop gain in the elderly but an increased upper airway obstruction due to increased interstitial and muscle tissue stiffness.

- Number of „non arousal causing“ central apneas might increase with higher age, but is therefore a pathologic cut off of AHI>15 or> 30 for elderly SDB candidates correct?

- Central apneas vs. Obstructive apneas?

- Apneas with arousals vs. Apneas without?
High loop gain and repeated obstructive apneas: more a problem of young than old

(Empirical) Facts? The difficulty to draw the line

- The basal BP is already higher in the elderly, a further increase with SDB has maybe less impact.

- The causality of SDB as a reason for onset of diabetes type II likewise high BP is more difficult to proof or less clear than in middle aged patients, because the diabetes onset is before discovery of SDB

- The professional life pressure for alertness and wakefulness during daytime is reduced, but the private life functioning pressure including performance in traffic is not.

- In questionnaires elderly have a tendency to deny daytime sleepiness. If they complain about EDS, it is more severe.
(Empirical) Facts? The difficulty to draw the line

• Nycturia in combination with SDB is more prominent in the elderly because several causes add up. It's becoming more annoying with age and an additional risk for falls.

• Reduced cognitive function in combination with SDB becomes more visible in the elderly because it adds up with onset dementia or senility.

• A stable higher BP and hypoxic preconditioning could be the reason for a shift in correlation of SDB and cardiac incidents to SDB and stroke.

Take home message 1 (totally subjective)

• The change in loop gain and lower respiratory drive with higher age calls for a closer look into the type of apnea and the amount of respiratory arousals in order to draw the line between physiologic and pathophysiologic breathing during sleep.

• Only then a higher cut off AHI $15^\text{> or } 30^\text{>}$ can be determined.

Due to the actual publications (Serve HF etc.) the pathophysiologic value and treatment need of central apneas, especially without arousals or as part of periodic breathing is put into question (under discussion).
Take home message 2 ( Totally subjective again)

• The line between physiologic and pathophysiologic SDB in the elderly should/can only be drawn clinically and age group dependent in the moment:
  1. Is there already a known stroke risk (TIA, BP crisis etc.)?
  2. Is EDS a QoL reducer?
  3. Has nycturia increased with SDB onset?
  4. Have falls occurred (with SDB onset)?
  5. Has memory loss increased with SDB onset?
  6. More than 30 events/h with respiratory arousals cry for help in every age group!

Praevalence

• SDB >15 AHI: 20% in people over 60
• 37% in people over 65
• 62% in people over 75 in nursing homes

• PLMS 45% in over 65 year old people (even gender distribution)
• RLS 9-11% (more men)
• RDB 0,5-1% in over 65year old people
Praevalence

• For SDB the prevalence numbers are stabilizing at around 35% for people over 65 years old.

• Means: In Germany live in the moment several million seniors with sleep apnea - where are they?

• Not in the sleep lab! Why?

Sleep disorders in the elderly are not taken seriously

SDB in the elderly is not detected because it’s more complex and doesn’t shine out!

EDS is considered to be normal or seniors are in denial: “the elderly beat the macho Madrileno in continuous alertness”!

Widely used instruments (ESS, BQ, Stop Bang) are often useless!
From the Touhy et al publication in BMJ Nephrology 2016
Sleep disorders in the elderly are not taken seriously

Patients, relatives and physicians do not believe in sleep apnea in the elderly and deny any therapeutic consequences!

Deja vu?

- Women do not snore!
What to do?

Find the switch in the brains of physicians and nurses!

What to do?

Find the switch in the brains of physicians and nurses:

The Essen Questionaire for Daytime Sleepiness in the Elderly

Physicians, nurses, relatives and health politicians or insurance people must just keep four things in mind:

SDB in geriatric medicine is about stroke, falls, cognitive function and reduced quality of life (remember the “best aging”)!
Socioeconomics or cost of consequences

Stroke prevalence for the >65y in the US is 8.3% (CDC 2010), 2.7% for the middle age group. OddsRatio for a stroke in sleep apnea is 1.97
Sleepiness as accident risk

- The risk for driving accidents caused by sleepiness is increases significantly at ages > 45yrs. and while driving at night (Source: German Automobile Club).
Consequences for clinical practice
Physicians - Dentists

My legal sentence in all my patient reports:

„We have to inform you that based on the EU driving law 2006/126/EG Annex III § 11.1-11.5 in regard of the actual medical results without treatment for the existing sleep disordered breathing the drivers license is not valid and driving is not allowed. We have the patient informed about the consequences.“

Socioeconomics or cost of consequences

And I didn’t even get into that topic!

Poor Sleep Might Be Worse For You Than Just Feeling Tired: It May Be Linked To Alzheimer's
PA/The Huffington Post UK | Posted: 22/10/2013 10:04 BST
The Link between Dementia and Sleep Apnea

- Memory loss through depressed REM sleep
- Memory loss through hypoxemia, desaturations and suppressed acetylcholine synthesis
- Neuron deterioration and plaques caused by high cerebral blood pressure and hypoxemia
- Increase of dementia by disturbed circadian rhythm

The question is: Would you treat this Alzheimer’s patient if he has sleep apnea?
Con

- The patient, his relatives and his family doctor see no sense in a CPAP treatment. They see it as a burden for them all: Why torture the old men with a mask?

- A CPAP treatment is not stopping the final progress of the Alzheimer’s, only slowing it down, maybe. Isn’t that just an extension of his suffering?

- If the patient can’t recognize the importance of the treatment he might be scared of it.

We have to change these numbers

n= 322 patients of a geriatric hospital ward

- mild SDB (28.3%)
  - treatment only if EDS
- no SDB (43.3%)
  - no indication for treatment
- refusal of any treatment (9.3%)
- treatment with oxygen (6.5%)
- refusal of any investigation (10.4%)
- acceptance of nCPAP (2.3%)
Pro

CPAP treatment in demented elderly significantly improves verbal learning and memory and some aspects of executive functioning such as cognitive flexibility, and mental processing speed. (Post vs. Pre treatment)

Pro

- CPAP treatment might reduce the risk of comorbidities in this patient group, explicitly for a stroke
- Demented people have even more falls than non-demented elderly people and CPAP reduces the risk of falls
- Once started the compliance rate for CPAP treatment is pretty high in elderly patients
Pro

- The treatment of demented sleep apnea patients is possible when the care giving and nursing is implemented in the therapy.

Socioeconomics or cost of consequences

This means very simply thought that in 40tsd elderly European people a stroke could be avoided by treating the sleep apnea, they have. Each stroke survivor case costs around 100000€ in a European country.
Socioeconomics or cost of consequences

A demented elderly person has a 27000€/year higher cost of nursing than a regular frail elderly person.

Given the chance that the more intense nursing could be obsolete for just 6 month because of a slowed down cognitive impairment, the saved cost for nursing could be 5,265 Billion € in Germany in a period of 5-10 years!

Take home massage 3

The prevalences are high. 
The economical burden of untreated SDB in the elderly is high.  
We should treat our elderly sleep apnea patients.
Geriatric Sleep Medicine: Gerodontological Aspects

The dental aspects of sleep disorders in the elderly are crucial:

Because of non-functional dentures or nightly removed dentures the pharynx stability is decreased and the upper airways further obstructed.

Well fitted dentures or sanitized teeth are important to guarantee upper airway stability.

The role of implants for the sanitization should be thought over and solving the financial burden is a challenge that should be taken on.

Geriatric Sleep Medicine: Gerodontological Aspects

Fitted dentures or sanitized teeth are needed for both:

• To guarantee a fixation point for the CPAP mask or to be able to fixate an oral appliance

• In the future a combined daytime denture and night time lower and upper jaw protrusion denture should be discussed.

• The Dolder bar beside implants could be a less expensive solution to fixate such dentures respectively an oral appliance

• Oral appliances have been shown to be helpful in the elderly with complex sleep apnea and periodic breathing caused by heart failure.

Hypoglossal nerve stimulation in the elder?

- Hypoglossal nerve stimulation might work in the elder but it will probably be more a treatment for best agers with low risk around surgery, cognitive fitness and high compliance.

More literature

More literature


Thank you for your attention 😊

Innsbruck: View over the golden roof