



Orthostatic hypotension and drug therapy in patients at an outpatient comprehensive geriatric assessment unit

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OH: significance

- Prevalence 65+ : >10% (community) up to 40% in selected settings (geriatric clinics, fall clinics, and LTC)
- ↑ risk for falls, cardiac events , heart failure , stroke.
- Probably ↑ risk of mortality
- Retrospective study; our findings on factors associated with OH in 65+ who underwent an ambulatory CGA.

Study population and BP measurement

- 01/2005-12/2013
- 65+, multidisciplinary team (geriatrician, nurse, SW, in some cases a nutritionist, OT and PT).
- Computerized database:
sociodemographic data, life habits, BMI, MMSE, OARS- IADL, the Barthel Index, a list of chronic diseases, the Charlson Comorbidity Index Total Score (CCITS) , and a list of the medications.
- OH: systolic ≥ 20 mm Hg and/or diastolic ≥ 10 mm Hg at 1st and/ or 3rd min of standing

RESULTS

- 628 patients underwent the CGA, 571 (90.9%) had BP measurements that enabled us to calculate OH.
- The mean age: 83.7 ± 6.1
- 35.9% were men.
- The rate for OH was 32.1%.

Characteristics associated with OH

- In univariate analysis ↑ risk for OH was associated with:
 - male sex
 - CCI-TS
 - DM
 - A large number of drugs , a large number of drugs with a potential to cause OH
 - CCBs, nitrates, α-blockers, TCAs, SSRIs
 - High systolic or diastolic BP in lying position
- In univariate analysis ↑ risk for OH was **not** associated with:
 - age, BMI, falls, BADL, IADL, MMSE ;
 - chronic diseases (excl. DM)
 - B-blockers, thiazides, loop diuretics, ACEI, antipsychotics , anti-Parkinson's and SNRIs

The morbidity variables

- **DM** ↑ risk for OH (OR=1.50, 95% CI: 1.05–2.15) and the association was not affected by adjustment for age, but its statistical significance was negated by adjustment for the number of drugs with the potential to cause orthostatic hypotension (OR=1.33, 95% CI: 0.91–1.95).
- **CCI-TS** significance was lost with the adjustment for age and sex (OR=1.08, 95% CI: 0.98–1.21).

Logistic regression models: medications

TABLE 2. Relationship between medications and orthostatic hypotension (crude and adjusted odds ratio for orthostatic hypotension [95% confidence interval])

	Odds ratio (95% CI)			
	Crude	Adjusted model 1 ^a	Adjusted model 2 ^b	Adjusted model 3 ^c
Medication type				
α-blockers	2.01 (1.33–3.03)	1.78 (1.09–2.91)	1.80 (1.04–3.10)	1.82 (1.01–3.16)
Calcium channel blockers	1.60 (1.12–2.29)	1.74 (1.21–2.50)	1.67 (1.12–2.50)	1.66 (1.11–2.48)
Nitrates	1.89 (1.08–3.32)	1.79 (1.00–3.11)	1.63 (0.89–2.97)	1.71 (0.94–3.14)
SSRIs	2.07 (1.39–3.09)	2.27 (1.51–3.42)	2.09 (1.33–3.28)	2.09 (1.33–3.29)
TCAs	3.62 (1.61–8.15)	3.75 (1.66–8.49)	4.21 (1.80–9.89)	4.36 (1.85–10.26)
Number of medications/month	1.08 (1.04–1.13)	1.08 (1.04–1.13)	1.08 (1.03–1.13)	1.09 (1.03–1.14)
Number of medications with OH potential	1.24 (1.12–1.38)	1.23 (1.11–1.37)	1.22 (1.08–1.37)	1.22 (1.08–1.37)

CI, confidence interval; OH, orthostatic hypotension; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants.

^aAdjusted model 1 – adjusted for age and sex.

^bAdjusted model 2 – adjusted for age, sex, and Charlson Comorbidity Index Total Score.

^cAdjusted model 3 – adjusted for age, sex, Charlson Comorbidity Index Total Score, and supine hypertension (≥ 150 mmHg).

Discussion

- No association of OH with co-morbidity: too ill?
- After adjustment, the addition of 1 drug to the list of monthly drugs ↑ the risk to develop OH 9.0%.
- The risk ↑ to 22% if the drug had the potential to cause OH.
- CCBs, α-blockers – OK.
- TCAs- OK (potent α-adrenoceptor antagonists)
- SSRIs ?? X ???
- Andrews & Pinner (1998) : 43 cases were reported to the Committee on Safety of Medicines (paroxetine).
- Poon & Braun (2005): 86% of the patients in a geriatric clinic who took paroxetine and 35% of those who took sertraline suffered from OH.
- Gaxatte et al., (2013)- 833 patients in a falls clinic: SSRIs ↑ risk for OH with an OR of 2.4.
- The mechanism of this phenomenon is not clear but may be linked to the inhibition of Ca²⁺ channels.

Strengths

- a relatively large sample size with a large amount of data on the patients' medical, functional, and cognitive condition and full information on their pharmacological therapy. As a result, we were able to construct adjusted logistic regression model
- the same nurse performed all the blood pressure measurements throughout the study years using the same measurement method, thus reducing the risk of bias.

Limitations

- highly selected patients with geriatric syndromes.
- a retrospective study based on medical records.
- we only performed one BP measurement to calculate OH (reproducibility?).

Conclusions

- 1/3 with OH
- Drugs!!!



תודה רבה על הקשבה