Hypertension treatment and cross-sectional relationship with peripheral and central blood pressure in non-diabetic patients from the CARTaGENE Cohort Study

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Objective

We aimed to compare TZD with different classes of antihypertensive medications in relation with peripheral and central blood pressure (pBP and cBP) measurements.

Methods

- **Data source**: CARTaGENE, a large ongoing prospective health study of a random sample of the adult population (40 and 69 years) from Quebec.
- **Study population**: Non-diabetic hypertensive participants in CARTaGENE, on monotherapy for uncomplicated hypertension.
- **Medication assessment**: Current medication reported by patients. Antihypertensive drugs were classified within the following categories: ACEis; ARBs; beta blockers (BBs); CCBs; TDs, and other antihypertensive medications
- **BP measures**: Peripheral BP (pBP) was taken in triplicate. Radial artery waveforms were recorded (SCOR-Px Sphygmocor®, AtCor Medical, Sydney, Australia) and mathematically transformed to derive aortic (central) waveform.
- **Statistical analyses**: Multivariable linear comparing TZDs versus Non-TZDs antihypertensives were constructed for each of the following outcomes: central and peripheral systolic BP and diastolic BP (DBP), mean pressure (MAP), and augmentation index (AIx). All models included a pre-specified set of potential confounders that were selected based on clinical knowledge.

Results

Table 1 - Peripheral and central blood pressure measurements according to antihypertensive therapy

	Class of antihypertensive medications – Mean (95% CI)					
	ACEi (n = 268)	ARBs (n = 449)	BBs (n = 156)	CCBs (n = 187)	Others (n = 46)	TDs (n = 88)
Peripheral SBP, mm Hg	130.8 (129.1-132.5)	131.1(129.8-132.4)	127.4 (125.0-129.8)*	133.7 (131.8-135.6)	130.9 (127.2-134.6)	133.6 (130.3-36.9)
Peripheral DBP, mm Hg	77.9 (76.8-79.0)	77.4 (76.4-78.4)	74.5 (72.9-76.1)*	79.1 (77.7-80.5)	80.4 (78.1-82.7)	79.0 (76.8-81.2)
MAP, mm Hg	96.4 (95.1-97.7)	96.6 (95.6-97.6)	94.1 (92.3-95.9)*	98.8 (97.3-100.3)	99.1 (96.8-101.4)	99.1 (96.7-101.5)
Peripheral AIx, %	84.9 (83.1-86.7)*	87.5 (85.8-89.2)	93.7 (91.1-96.3)	88.9 (86.4-91.4)	88.6 (84.8-92.4)	91.1 (87.9-94.3)
Central SBP, mm Hg	120.0(118.3-121.7)	120.6(119.3-121.9)	119.6 (117.3-121.9)	123.5 (121.6-125.4)	121.9 (118.3-125.5)	123.8 (120.5-127.1)
Central DBP, mm Hg	79.0 (77.8-80.2)	78.5 (77.5-79.5)	75.4 (73.8-77.0)*	80.2 (78.8-81.6)	81.5 (79.2-83.8)	80.2 (78.0-82.4)
Central AIx, %	25.8 (24.5-27.1)*	27.2 (26.2-28.2)	32.0 (30.3-33.7)	28.4 (26.9-29.9)	29.7(26.8-32.6)	30.1 (27.9-32.3)

ACEi - angiotensin-converting enzyme inhibitors; ARB - angiotensin receptor blockers; BB - beta blockers; CCB - calcium channel blockers; other antihypertensive agents, including: diuretics (other than thiazides), antiadrenergic agents, agents acting on the renin-angiotensin system (excluding ACEi and AB); TD – thiazides diuretics; SBP – systolic blood pressure; DBP – diastolic blood pressure; PP – pulse pressure; MAP – Mean arterial pressure; AIx – augmentation index. Student t-test were performed to compare each drug class with TD, and significant results are represented by *p < 0.05.

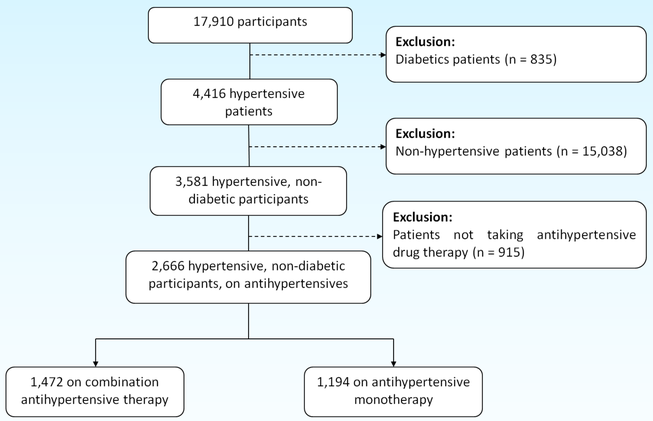

Figure 1: Study flow chart

Table 2 - Adjusted regression coefficients for users of TD monotherapy compared with users of non-TDs

Outcomes	Drug groups: TD versus Non-TD	
	Adjusted Coefficient	95% CI
Peripheral SBP	-0.313[a]	-2.057, 2.683
Peripheral DBP	-0.987[b]	- 3.244, 1.271
MAP	-0.939[b]	-3.555, 1.678
Peripheral AIx	0.365[a]	-3.134, 3.864
Central SBP	0.445[a]	-1.610, 2.449
Central DBP	-0.954[b]	-3.232, 1.325
Central AIx	-0.254[a]	-2.130, 1.621

Conclusions

- Our results showed that no significant differences for both peripheral and central BP were found when TDs were compared with other antihypertensive classes in unselected population.
- These findings reinforce the importance of TDs as a first-line therapy for the majority of patients with uncomplicated hypertension.