Contemporary Trends in Hypertension in Canada: Insights from the Primary Care Audit of Global Risk Management (PARADIGM) Study

M. Gupta[1, 2 ,3, 4], K. Chawla[1], M. Kajil[1], S. Roy[1], M. Tsigoulis[1], S. Verma[1, 3, 4]

[1]Canadian Cardiovascular Research Network, Brampton, ON; [2]McMaster University, Hamilton, ON;
[3]Keenan Research Centre in the Li Ka Shing Knowledge Institute of St. Michael's, Toronto, ON; [4]University of Toronto, Toronto, ON

BACKGROUND

- The PARADIGM study is an observational registry, the primary objective of which is to evaluate primary care physician assessment of global cardiovascular risk in healthy individuals.
- In 2009/2010, primary care physician investigators from 105 sites across Canada prospectively enrolled 3015 healthy middle-aged adults in PARADIGM to assess the prevalence of CV risk factors and trends in CV risk assessment using traditional biochemical and novel inflammatory and structural biomarkers of atherosclerosis.
- There are limited data available documenting the risk profile and types of antihypertensive agents used in patients with hypertension, particularly in the setting of primary prevention
- We characterized contemporary risk factors and treatment patterns in a sub-analysis of hypertensive subjects in the PARADIGM study

METHODS

- The PARADIGM study enrolled 3015 generally healthy, middle-aged patients in an observational registry
- Subjects with diabetes or vascular disease were excluded
- Thus, PARADIGM represents a truly primary prevention cohort
- This analysis reports on 917 PARADIGM subjects with either treated or untreated hypertension

PARADIGM STUDY OBJECTIVES

Primary objective

- To evaluate primary care physician assessment of global cardiovascular risk in healthy individuals

Secondary objectives

- To evaluate the prevalence of classic and novel markers of risk
- To evaluate the feasibility of bedside carotid atherosclerosis assessment, and its correlation to biochemical risk markers and the total CV Framingham Risk Score (FRS)
- To disseminate best practices and new knowledge to key stakeholders in the primary prevention of cardiovascular disease

OBJECTIVES OF HYPERTENSION SUBANALYSIS

- To determine prevalence of coexisting CV risk factors in otherwise healthy hypertensive patients
- To evaluate the risk category of hypertensive subjects based on the Total CV Framingham Risk Score
- To assess the choices of antihypertensive agents in the management of hypertension

STUDY SETTING AND ENROLMENT

3015 healthy middle-aged adults were enrolled in PARADIGM by primary care physician investigators from 105 sites across Canada.

This analysis reports on 917 PARADIGM subjects with either treated (88%) or untreated hypertension.

Inclusion Criteria

- Men ≥40y, women ≥50y
- Absence of known high Framingham Risk Score
- Non-diabetic
- Absence of lipid lowering treatment (current or past)
- No previous history of atherosclerosis (angina, TIA, myocardial infarction, stroke, peripheral arterial disease)
- Willingness to give informed consent

BASELINE DEMOGRAPHICS

n=917	Mean or %
Age (yrs)	59 +/- 9
Female	46%
Ethnicity	
Caucasian	68%
Non Caucasian	32%
Mean BP in treated patients	
Systolic (mm Hg)	133 +/-14
Diastolic (mm Hg)	81+/-9
Mean BP in untreated patients	
Systolic (mm Hg)	145 +/- 13
Diastolic (mm Hg)	91 +/- 9
Total CV Framingham Risk Score	
Low	20%
Intermediate	41%
High	39%

n=917	Mean or %
Smoking (past/current)	36%
Family Hx	27%
Abdominal obesity	63%
Dyslipidemia	33%
LDL (mmol/L/mg/dL)	3.6/139 +/- 0.8/31
HsCRP (mg/L)	3.7 +/- 5
HbA1C	0.06 +/- 0.01
Creatinine (umol/L/mg/dL)	80/0.91+/- 17/0.19
eGFR	76 +/- 17

RESULTS

Figure 1: Antihypertensive Therapy (Monotherapy vs Combination Therapy)

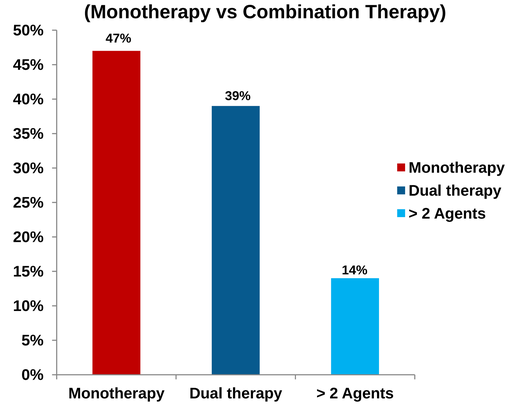


Figure 2: Monotherapy

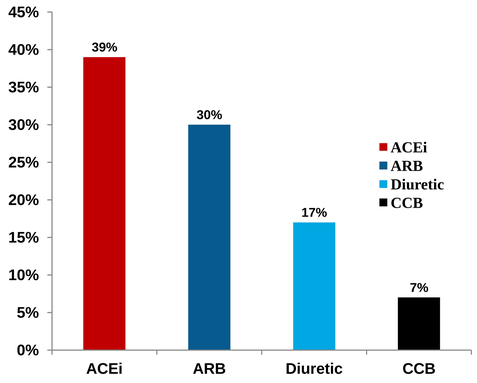
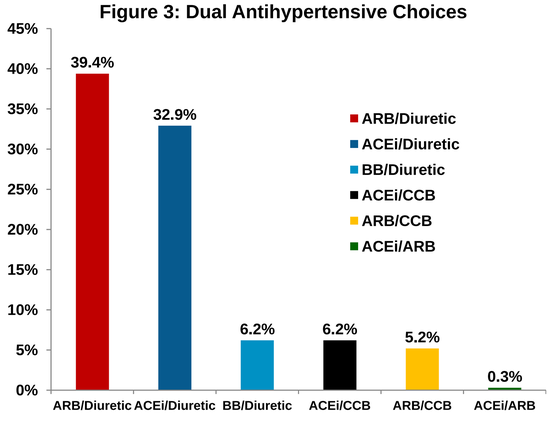
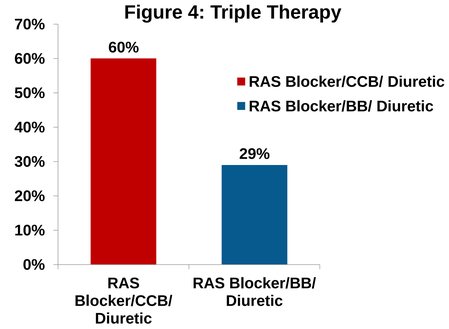


Figure 3: Dual Antihypertensive Choices



RESULTS

Figure 4: Triple Therapy



CONCLUSIONS

In patients with uncomplicated hypertension:

- The majority require combination antihypertensive therapy
- BP control is quite reasonable
- 2/3 have abdominal obesity and 1/3 have dyslipidemia
- Despite good BP control, 80% of patients have an intermediate to high FRS
- In monotherapy, ACEi was the most frequently used class followed by ARB
- The most common combination therapy employed was ARB and diuretic followed by ACE inhibitor and diuretic
- Combination therapies employing a CCB were fairly uncommon

IMPLICATIONS

- Despite reasonable BP control, Canadians with uncomplicated hypertension remain at increased cardiovascular risk
- Despite recent data suggesting that RAS/CCB combinations may provide better CV protection than RAS/diuretic combinations (ASCOT, ACCOMPLISH), the use of this combination is quite low

CONFLICTS OF INTEREST

The authors report no conflicts of interest to disclose

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