

Deterioration of glycemic control among South Asians vs. White Caucasians with diabetes and concomitant coronary artery disease – Analysis from the PRACTICE Registry

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BACKGROUND

- Type 2 Diabetes (DM) confers additional risk in patients with coronary artery disease (CAD).
- Glycemic control is known to deteriorate over time in patients with DM.
- South Asians (SA) are at particularly high risk for developing both DM and CAD.
- The durability of glycemic control in SA with concomitant DM and CAD is unclear.
- We compared the durability of glycemic control in SA and white Caucasian (WC) patients with CAD over a 5-year period in the PRACTICE Registry.

METHODS

- The PRACTICE Registry enrolled 545 subjects with a history of CAD at a single center in Brampton, Canada over a 1-year period.
- Inclusion Criteria:
 - ✓ Prior MI, PCI, CABG surgery or:
 - ✓ Angiographic coronary stenosis >50%
- Mean age 63 years, male 79%, body mass index (BMI) 27.3 kg/m², waist circumference (WC) 102.1cm.
- Proportion of subjects on evidence-based treatments for CAD: ASA 84%, ACEi or ARB 66%, Beta-blockers 64% and Statins 87%.
- Subjects were prospectively followed annually for 5 years.
- For this analysis, we included only those patients who had documented DM at baseline.
- DM was defined as any of:
 - ✓ FPG ≥ 7.0 mmol/L
 - ✓ HbA1c ≥ 6.5%
 - ✓ Patient reported diagnosis of DM
 - ✓ Use of glucose-lowering medication
- All subjects were and were treated in accordance with evidence-based guidelines for CAD and DM by their own physicians.

RESULTS

- Of 545 subjects in PRACTICE, 286 (52.5%) had diabetes at baseline (51% SA, 49% WC).
- Mean BMI (26.3 vs. 29.8 kg/m², p<0.01) and waist circumference (100.9 vs. 108 cm, p<0.01) were lower in SA at baseline compared to WC, respectively. Mean HbA1c at baseline was higher in SA vs. WC (7.1% vs. 6.5%, p<0.01), while fasting plasma glucose was similar in both groups (7.8 mmol/L). Baseline antidiabetic medication use was higher among SA vs. WC (64% vs. 36%, p<0.01).
- Intensification of antidiabetic therapy occurred in a higher proportion of SA vs. WC subjects over 5 year prospective follow-up (65% vs. 50%, p=0.02). However, HbA1c at 5 years remained higher in SA vs. WC (7.4% vs. 6.6%, p<0.01). The proportion of patients achieving at least one HbA1c ≤ 7%, either at baseline or at any annual follow-up visit, was higher in WC vs. SA subjects (96% vs. 89%, p=0.02).

Table 1: Baseline characteristics of subjects with diabetes by ethnicity

Baseline Characteristic	White Caucasian	South Asian	P-value
N	139	147	
Age (years)	64.3	63.3	0.40
Gender (M)	81.3%	72.1%	0.07
Hypertension	57.6%	66.7%	0.11
Hyperlipidemia	91.4%	87.8%	0.32
Smoking	12.2%	2.0%	<0.01
Prior MI	66.9%	72.8%	0.28
Prior PCI	33.1%	31.3%	0.75
Prior CABG	49.6%	52.4%	0.64
Prior Stroke / TIA	9.4%	8.8%	0.88
Family History of CVD	40.3%	27.9%	0.03
Waist (cm)	108.0 (11.6)	100.9 (10.6)	<0.01
BMI (kg/m ²)	29.8 (SD=4.9)	26.3 (SD=4.1)	<0.01

MI = Myocardial Infarction
 PCI = Percutaneous Coronary Intervention
 CABG = Coronary Artery Bypass Graft
 TIA = Transient Ischemic Attack
 FPG = Fasting Plasma Glucose

Table 3: BMI/Waist Circumference changes from baseline to year 5 between WC and SA

Variable	White Caucasian	South Asian	P-value
Waist (cm)			
Average change from baseline to year 5	2.04	1.11	0.90
BMI (kg/m ²)			
Average change from baseline to year 5	0.96	1.02	0.41

Table 2: Baseline and 5-year treatment and glycemic control parameters among White Caucasian and South Asian subjects

Variable	White Caucasian % (SD)	South Asian % (SD)	p-value
Baseline HbA1c (%)	6.5 (1.4)	7.1 (1.5)	<0.01
Baseline FPG (mmol/L)	7.8 (2.7)	7.8 (2.5)	0.99
Proportion with HbA1c ≤ 7% at baseline	72.5%	55.9%	<0.01
Proportion with HbA1c ≥ 9% at baseline	5%	14%	0.04
No diabetes medication or insulin use at baseline	64%	36%	<0.01
Monotherapy at baseline for diabetes	18%	36%	<0.01
Dual or Triple antidiabetic therapy at baseline	18%	28%	0.06
HbA1c at year 5 (%)	6.7% (1.0)	7.4% (1.2)	<0.01
Proportion with HbA1c ≤ 7% at year 5	72.1%	47.4%	<0.01
Proportion with HbA1c ≥ 9% at year 5	2.3%	15.5%	<0.01
Proportion of patients with intensification of antidiabetic therapy* by year 5	50%	65%	0.02
Proportion of patients with no intensification of antidiabetic therapy** by year 5 despite HbA1c >7%	10%	36.8%	0.01

* addition of Insulin, or addition of other antidiabetic agent therapy or increase in dose of any antidiabetic agent therapy at any of 5 years

** addition of Insulin, or addition of other antidiabetic agent therapy

DISCUSSION

In this prospective cohort of patients with stable CAD in Canada, where access and quality of healthcare provision for South Asians (SA) is similar to that of White Caucasian (WC) patients¹:

- SA subjects with CAD had poorer glycemic control at baseline compared with WC despite having lower measures of abdominal and overall obesity.
- Despite greater treatment intensification over time, SA subjects continued to have suboptimal glycemic control throughout the prospective 5 years of follow-up compared to WC.
- Adherence to medications by SA subjects was assessed at each visit.
- However, there was no statistical difference in BMI/Waist circumference between SA and WC from baseline to year 5.

Limitations:

- Dietary and exercise patterns were not assessed between SA and WC.
- Dietician services and diabetic education access was not assessed between SA and WC
- Greater inertia for therapy intensification among SA patients or among physicians treating these patients
- Greater reliance on traditional or herbal medications among SA subjects

Further studies are warranted to determine strategies to improve and maintain optimal glycemic control in SA patients with DM and CAD.

REFERENCES

1. Shah BR, et al.; Diabetes Care 2012;35:794–796
2. Chong et al.; Diabet. Med. 31, 1586–1593 (2014)

CONFLICTS OF INTEREST

The authors report no conflicts of interest to the current study analyses.

SUPPORT

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