AstraZeneca

STUDY REPORT SUMMARY

ASTRAZENECA PHARMACEUTICALS

FINISHED PRODUCT: N/A
ACTIVE INGREDIENT: N/A

Study No: NIS-CKR-DUM-2008/3
Hypertensive treatment pattern survey for Type II Diabetes Mellitus patients with Complication and Hypertension (CRYSTAL-CO)

Developmental phase: Marketed

Study Completion Date: 2009-5-31

Date of Report: 2009-12-3

OBJECTIVES:

Primary Objective

- Attainment rate to the target blood pressure in hypertension patients having Type 2 Diabetes mellitus with complication during the follow-up period

* The target blood pressure is referred to 130/80 mmHg based on JNC 7 and 2007 ESH-ESC guideline for the management of arterial hypertension.

Secondary Objectives

- Attainment to the target blood pressure will be investigated according to DM related complications.
- Change in the DBP/SBP value will be investigated according to the DM Complication.
- Treatment pattern and factors that affect BP control

METHODS:

This non-interventional observational study protocol was reviewed in accordance with the standard procedures of AstraZeneca.

This clinical study will collect basic clinical data on patients in order to assess attainment rate to target blood pressure and to find contributing factors in hypertension patients having Type 2 Diabetes mellitus with complication.

This study will keep a record of the following data on patients selected through medical record review. (Record in e-CRFs.)

Patient enrollment: New patients (newly diagnosed patients or transferred patients after diagnosed in other center/department → patients first treated by the investigator) eligible for the inclusion/exclusion criteria and visited since January 1, 2008, will be enrolled in consecutive order.

RESULTS:

Subject's information

A total of 1,882 subjects at 25 centers participated in this study. The male-female ratio was balanced. The mean age and weight of the subjects were 60.9 years and 65.5 kg, respectively. The mean duration of diabetes and age at onset of diabetes were 10.6 years and 50.1 years, respectively (Table S1).

Table S1. Subject's demographics

Items			
Sex (N=1882)	Male	n(%)	928(49.3%)
	Female	n(%)	954(50.7%)
Age (years) (N=1882)		Mean±SD	60.9±10.8
Weight (kg) (N=1641)		Mean±SD	65.5±10.6
Duration of diabetes (years) (N=1596)		Mean±SD	10.6±7.2
Age at onset of diabetes (years) (N=1596)		Mean±SD	50.1±11.4

Diabetic complications

All of the 1,882 subjects had diabetic complications; the most common diabetic complication was diabetic retinopathy in 42.8% followed by diabetic nephropathy in 41.4%, diabetic neuropathy in 35.1%, diabetic peripheral vascular disease in 15.4%, diabetic cardiovascular disease in 13.2% and diabetic foot ulcer in 3.8%.

Table S2. Type of diabetic complications (N=1882)

	n(%)
Subjects with diabetic complications	1882(100.0)
Diabetic complications	
Retinopathy	805(42.8)
Nephropathy	780(41.4)
Neuropathy	661(35.1)
Foot ulcer	71(3.8)
Cardiovascular disease	248(13.2)
Peripheral vascular disease	290(15.4)

Administration Information of Antidiabetic Drugs and Antihypertensive Agents

Oral antidiabetic drugs (OADs) were administered to approximately 81~82% of the subjects and non-oral antidiabetic drugs, approximately 31~33% of the subjects. Among them, sulfonylureas and biguanides were administered the most. During the observation period, 1,250 subjects did not change the OADs and 320 subjects changed the antidiabetic drugs (including addition and exclusion of the drugs).

Table S3. Administration Information of Antidiabetic Drugs (N=1882)

	At initial visit n(%)	At initial visit n(%)
Subjects who received OADs	1531(81.3)	1539(81.8)
Oral antidiabetic drugs		
Sulfonylureas	960(51.0)	954(50.7)
Biguanides (Metformin)	959(51.0)	974(51.8)
α-glucosidase inhibitor	315(16.7)	312(16.6)
PPAR-γ agonists	201(10.7)	200(10.6)
Meglitinide	97(5.2)	94(5.0)
Dipeptidyl peptidase-4 (DPP-4)	0	0

Non-oral antidiabetic drugs	580(30.8)	620(32.9)

Antihypertensive agents were administered to approximately 92~96% of the subjects. Among them, ARBs were administered the most. During the observation period, 1,420 subjects did not change the antihypertensive agents and 398 subjects changed the antihypertensive agents (including addition and exclusion of the agents).

Table S4. Administration Information of Antihypertensive Agents (N=1882)

	At initial visit n(%)	At initial visit n(%)
Subjects who received Antihypertensive Agents	1734(92.1)	1807(96.0)
Antihypertensive Agents		
Diuretics	297(15.8)	273(14.5)
ARB	1102(58.6)	1176(62.5)
β-Blockers	235(12.5)	249(13.2)
Ca2+ Channel Blockers	503(26.7)	467(24.8)
ACE Inhibitor	255(13.6)	228(12.1)
ARB/diuretic combination	218(11.6)	285(15.1)
Other combination	22(1.2)	24(1.3)
Others	6(0.3)	6(0.3)

Efficacy evaluation

The proportion of the subjects whose blood pressure was below 130/80 mmHg, the target blood pressure at the initial visit was 36.1%. The achievement rate of the target blood pressure at the final visit after the observation period was increased to 56.4%. During the same period, SBP and DBP were decreased by an average of 7.3 mmHg and 4.2 mmHg, respectively. The subjects treated with ARBs or Ca2+ channel blockers showed reduction in blood pressure and the largest increase in the achievement rate of the target blood pressure.

Table S5. Change of blood pressure and achievement rate of target BP

Item	At initial visit	At final visit	Change	Achievement rate of target BP (At initial visit)	Achievement rate of target BP (At final visit)
SBP (N=1868)	136.0±16.8	128.7±13.6	-7.3±15.4	674(36.1)	1054(56.4)
DBP (N=1868)	80.7±11.2	76.5±9.2	-4.2±9.9		

During the observation period, changes in HbA1c, FPG and PPG were examined. As a result, HbA1c, FPG and PPG were decreased by an average of 0.20%, 9.4 mg/dl and 13.2 mg/dl, respectively, in the subjects subjected to the evaluation.

Table S6. Changes in HbA1c, FPG and PPG (mean±standard deviation)

Item	At initial visit	At final visit	Change
HbA1c (N=909)	7.87±1.60	7.67±1.36	-0.20±1.29
FPG (N=897)	145.8±55.4	136.4±46.4	-9.4±57.5
PPG (N=187)	213.0±82.7	199.8±63.4	-13.2±83.8