Malaysia-ACute CORonary syndromes Descriptive study (ACCORD): evaluation of compliance with existing guidelines in patients with acute coronary syndrome

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ABSTRACT

Introduction: The ACute CORonary syndromes Descriptive study (ACCORD) is a prospective observational study that evaluates the management of acute coronary syndrome (ACS) in clinical practice and the use of antiplatelet agents in acute settings and after discharge. The secondary objective of this study was to obtain information on risk factors in a large cohort of patients with ACS.

Methods: The study population included subjects aged at least 21 years who had unstable angina or non-ST elevation myocardial infarction. The patients had four follow-up visits over a one-year period.

Results: A total of 525 patients from Malaysia were enrolled into the study. The mean age of the patients was 58.14 +/− 11.3 years, and the mean body mass index was 25.4 +/− 4.3 kg/m^2. 96.8 percent of subjects had at least one cardiovascular risk factor. Following hospitalisation, 83.6 percent of patients were managed medically. During the follow-up visits, 62.7–77.6 percent of patients received aspirin only, 5.0–6.8 percent received clopidogrel only and 15.6–32.3 percent received dual antiplatelet medications. Compliance with aspirin was 93.5–96.5 percent. Clopidogrel compliance was above 80 percent of the prescribed tablets for more than 88 percent of patients.

Conclusion: Patients in the Malaysia-ACCORD registry were much younger compared to those in the Global Registry of Acute Coronary Events. The majority of patients had cardiovascular risk factors at presentation and were treated medically, and those on dual antiplatelet therapy had a relatively high level of compliance.

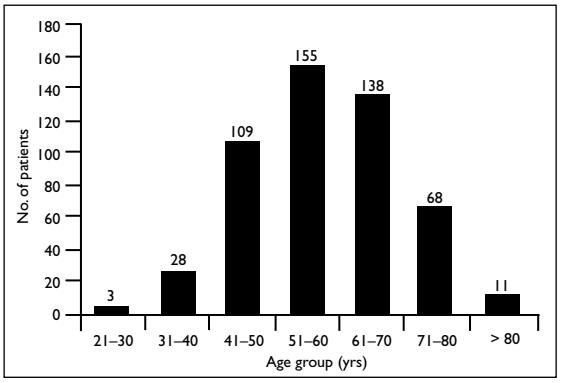

Fig. 1 Age distribution of patients in the Malaysia ACCORD study.

Keywords: acute coronary syndrome, antiplatelets, compliance, guidelines

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INTRODUCTION

Coronary artery disease (CAD) is the commonest cause of death worldwide. It is characterised pathologically by progressive occlusive atherosclerosis, acute plaque rupture and atherothrombosis.[1] Coronary artery thrombosis is a consequence of disruption of the endothelial monolayer, leading to platelet adhesion, activation and aggregation. The aggregated platelets accelerate the production of thrombin, which stabilises the thrombus by generating fibrin and potentiating platelet activation. The key role of platelet activation and aggregation in the pathophysiology of acute coronary syndrome (ACS) is well recognised.[2,3] The beneficial role of aspirin and clopidogrel in ACS has also been proven in several trials.[4-7] In Malaysia, the Clinical Practice Guidelines on unstable angina (UA)/non-ST elevation myocardial infarction (NSTEMI) 2002 was published and co-sponsored by the Ministry of Health, National Heart Association and Academy of Medicine. This guideline recommends the use of dual antiplatelet therapy (aspirin and clopidogrel) for one year.[8] The purpose of the ACute CORonary syndromes

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Table I. History of cardiovascular risk factors.

Variable	No. (%)
Hypertension	347 (66.1)
History of coronary artery disease	338 (64.4)
Myocardial infarction	95 (28.1)
Unstable angina	119 (35.2)
Stable angina	52 (15.4)
CABG	25 (7.4)
PCI	47 (13.9)
Diabetes mellitus	204 (38.9)
Dyslipidaemia	212 (40.4)
Active smoker	114 (21.7)
Past smoker	133 (25.3)
History of cerebrovascular disease	21 (4.0)
Family history of coronary artery events	79 (15.0)
CRF*	28 (5.3)
Menopause†	63 (48.1)
HRT/oral contraceptives†	1 (0.8)
No cardiovascular risk factor	17 (3.2)

* CRF patients are defined as those with serum creatinine > 200 µmol/L.
† Only female patients (n = 131) were used as denominator.
CABG: coronary artery bypass grafting; PCI: percutaneous coronary intervention; CRF: chronic renal failure; HRT: hormone replacement therapy

Descriptive (ACCORD) study was to document both the management of ACS (UA and NSTEMI) in clinical practice and the implementation of these existing guidelines, in particular, the use of antiplatelets in acute settings and after discharge. The secondary objective was to obtain information on risk factors in a large cohort of patients with ACS.

METHODS

A total of 525 patients aged > 21 years who were diagnosed with UA or NSTEMI were selected from 17 sites in Malaysia. Among the 17 hospitals, six had onsite cardiac catheterisation facilities (secondary: 2, private: 2, tertiary: 1, university: 1), and the remaining 11 were secondary hospitals. The American College of Cardiology/American Heart Association 2002 guidelines were used to define the cases.[9] The study was conducted from July 1, 2004 to April 30, 2005. The assessment criteria included past medical history, risk factors, prior medication or cardiac interventions, in-hospital medications and adherence to treatment. Patients were followed up at three-month intervals (four times) over a one-year period. At each visit, prescription and compliance to antiplatelet drugs was observed.

Table II. Treatment of patients during hospitalisation (n = 525).

Variable	No. (%)
Medical management	439 (83.6)
Procedure during hospitalisation (n = 86)	
Coronary angiogram only	12 (14.0)
Coronary angiogram/PCI	66 (76.7)
Coronary angiogram/CABG	7 (8.1)
Coronary angiogram/PCI/CABG*	1 (1.2)
Treatment during procedures	
IIb/IIIa antagonist	5 (1.0)
Clopidogrel†	66 (12.6)

* Clopidogrel was stopped, as the patient required emergency CABG following PCI.
† All patients who underwent PCI received clopidogrel.
PCI: percutaneous coronary intervention; CABG: coronary artery bypass grafting

Table III. Treatments prescribed to patients during hospitalisation and at discharge (n = 525).

Treatment	No. (%)
Aspirin (acetylsalicyclic acid)	456 (86.9)
Clopidogrel	275 (52.4)
LMWH	366 (69.7)
Oral anticoagulants	11 (2.1)
Ca-antagonists	110 (21.1)
Digitalis	22 (4.2)
Nitrates	276 (53.0)
Diuretics	141 (27.1)
Beta-blockers	384 (73.1)
Angiotensin receptor blockers*	43 (8.3)
Antiarrhythmics	9 (1.7)
Statin	468 (89.1)
Insulin†	33 (16.2)
Oral hypoglycaemic agents†	163 (79.9)

* Angiotensin-converting enzyme inhibitor was not recorded in the study.
† Only diabetic patients (n = 204) were used as denominator.
LMWH: low-molecular-weight heparin

RESULTS

In all, 75% (n = 394) of patients were male and 25% (n = 131) were female. The mean age of the patients was 58.1 years, and the mean body mass index was 25.4 kg/m^2. The highest incidence of ACS was observed in the age group 51–60 years (Fig. 1). 96.8% (n = 508) of patients had at least one risk factor. Hypertension and diabetes mellitus were present in 66.1% (n = 347) and 38.9% (n = 204) of patients, respectively. 21.7% (n = 114) of patients were current smokers, while 25.3% (n = 133) were ex-smokers. 40.4% (n = 212) of patients had

Table IV. Treatment according to patient visit.*

Type of treatment	No. (%)			
	Visit 2 (n = 500)[a]	Visit 3 (n = 478)[b]	Visit 4 (n = 471)[c]	Visit 5 (n = 454)[d]
Aspirin only	237 (62.7)	238 (71.9)	230 (73.0)	228 (77.6)
Clopidrogrel only	19 (5.0)	21 (6.3)	19 (6.0)	20 (6.8)
Aspirin + clopidogrel	122 (32.3)	72 (21.8)	66 (21.0)	46 (15.6)

* Admission was considered as 1st visit in the protocol.
Data is missing for [a] 122, [b] 147, [c] 156, [d] 160 patients.
LMWH: low-molecular-weight heparin

Table V. Treatment with aspirin only.

Aspirin treatment	No. (%)			
	Visit 2 (n = 237)[a]	Visit 3 (n = 238)[b]	Visit 4 (n = 230)[c]	Visit 5 (n = 228)[d]
Aspirin dosage (mg/day)				
≤ 100	85 (36.3)	90 (38.1)	96 (42.9)	89 (39.7)
> 100 to < 200	149 (63.7)	145 (61.4)	128 (57.1)	135 (60.3)
≥ 200	0 (0.0)	1 (0.4)	0 (0.0)	0 (0.0)
Permanently discontinued	9 (3.8)	7 (2.9)	15 (6.5)	8 (3.5)

Data is missing for [a] 3, [b] 2, [c] 6, [d] 4 patients.

dyslipidaemia, 64.4% (n = 338) had a previous history of coronary artery disease and 15.0% (n = 79) had a family history of coronary artery disease (Table I).

Following hospitalisation, 83.6% (n = 439) of patients were managed medically and 16.4% (n = 86) were advised coronary angiogram in view of the interventions. Of those who had undergone coronary angiogram, 14.0% had only angiograms done. 76.7% had percutaneous coronary intervention (PCI), 8.1% had coronary artery bypass grafting (CABG) and 1.2% had PCI followed by CABG (Table II). With regard to medications during hospitalisation and at discharge, 86.9% (n = 456) of patients received aspirin, 52.4% (n = 275) received clopidogrel, 48.4% (n = 254) received dual antiplatelets, 73.1% (n = 384) received beta-blockers, 89.1% (n = 468) received statin and 69.7% (n = 366) received low-molecular-weight heparin (LMWH) (Table III).

95.2% (n = 500) of patients attended the follow-up at three months post discharge (visit-2), 91.0% (n = 478) at six months (visit-3), 89.7% (n = 471) at nine months (visit-4), and 86.5% (n = 454) completed the study on the 12th month (visit-5). With regard to the pattern of antiplatelet prescription during each follow-up visit, aspirin was mostly prescribed (62.7%–77.6%), while only clopidogrel was prescribed for 5.0%–6.8% of the patients. The prescription of dual antiplatelet therapy (aspirin and clopidogrel) decreased from 32.3% at visit-2 to 15.6% at visit-5 (Table IV). Among patients treated with aspirin only, 2.9%–6.5% discontinued the treatment permanently. Among those treated with clopidogrel only, the compliance was > 80% of prescribed tablets in > 88% of subjects (Tables IV & V). With regard to combined aspirin and clopidogrel medications, > 90% of the patients had clopidogrel compliance for > 80% of the prescribed tablets.

DISCUSSION

A total of 525 patients from 17 sites around Malaysia were enrolled in the ACCORD study. The maximum incidence of ACS was noted in the age group 51–60 years, and the male to female ratio was 3:1; both of which were consistent with the findings of the 2006 National Cardiovascular Disease Database (NCVD)-ACS registry.[10] The mean age of our patients was 58.14 years, which was much younger than the age of 66 years found in the Global Registry of Acute Coronary Events (GRACE).[11]

Most (96.8%) of the patients had at least one established cardiovascular risk factor. In our study, 66.1% of patients had hypertension, 38.9% had diabetes mellitus and 40.4% had dyslipidaemia. In the ACS registry-2006, the figures for hypertension, diabetes mellitus and dyslipidaemia were 72.6%, 55.0% and 55.9%, respectively,[10] whereas those for GRACE were 57.8%, 23.3% and 43.6%, respectively.[11] These findings suggest that in Malaysia, hypertension, diabetes mellitus and dyslipidaemia contribute a higher risk to the majority of patients. 21.7% of patients in our ACCORD

study were active smokers and 25.3% were ex-smokers. In the ACS registry-2006, these figures were 33% and 24%, respectively.[10] In our ACCORD study, 64.4% of the patients had a past history of coronary artery disease, whereas 15.0% had a positive family history of cardiovascular events and 48.0% of the female patients were post-menopausal.

In our study, most of the patients (83.6%) were treated medically, whereas interventional therapies such as PCI and CABG remained underutilised, as the majority of the participating hospitals did not have an in-house cardiologist and cardiac catheterisation facilities. 87.5% of the patients received aspirin, and the compliance for this group of patients was > 90% for those who attended follow-up visits. Clopidogrel was prescribed to 52.8% of patients, and most of these patients reported > 80% compliance, while up to 15.8% of patients stopped clopidogrel permanently. The majority of patients who were treated medically did not receive dual antiplatelet therapy due to the high cost and reduced availability of clopidogrel. All patients who underwent PCI were given clopidogrel. Compliance was good among patients on dual antiplatelet medications (aspirin 97.2%–98.4%, clopidogrel 85.2%–95.8%). The small size of the study population may limit the degree to which our findings can be generalised. In addition, the study did not determine the reason for low compliance for some of the medications.

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