

Impact of Angiotensin-Converting Enzyme Inhibitors Administration Prior to Acute Ischemic Stroke Onset on In-Hospital Mortality

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Yahaya Hassan, PharmD¹, Noorizan Abd Aziz, PharmD¹, Samah W. Al-Jabi, MSc^{1,2}, Irene Looi, MBBS, MRCP³, and Sa'ed H. Zyoud, MSc^{2,4}

Abstract

Introduction: Angiotensin-converting enzyme inhibitors (ACEIs) have shown promising results in decreasing the incidence and the severity of ischemic stroke in populations at risk and in improving ischemic stroke outcomes. **Objectives:** The objectives of this study were to investigate the impact of ACEI use before ischemic stroke onset on in-hospital mortality and to identify the independent predictors of in-hospital mortality among patients with ischemic stroke. **Methods and Materials:** A retrospective cohort study of all patients with acute ischemic stroke attending the hospital from June 1, 2008 to November 30, 2008 was performed. Data were collected from medical records and included demographic information, diagnostic information, risk factors, previous ACEI use, and vital discharge status. Statistical Package for Social Sciences (SPSS) version 15 was used for data analysis. **Results:** A total of 327 patients with acute ischemic stroke were studied, of which 119 (36.4%) had documented previous ACEI use. During the study period, 52 (15.9%) of the patients with acute ischemic stroke died in hospital. In-hospital mortality was significantly lower among patients who were on ACEI before the attack ($P = 0.002$). The independent predictors for in-hospital mortality among patients with ischemic stroke were age ≥ 65 years ($P < .001$), the presence of diabetes mellitus ($P = .012$), renal impairment ($P = .002$), and heart failure ($P = .001$). Moreover, prior use of ACEI was an independent predictor for survival after ischemic stroke attack ($P < .001$). **Conclusion:** This study provides evidence that the prophylactic administration of ACEI before ischemic stroke may be a potential life-saving strategy. Furthermore, knowledge of in-hospital mortality predictors is necessary to improve survival rate after acute stroke.

Keywords

acute ischemic stroke, angiotensin-converting enzyme inhibitors, in-hospital mortality

Introduction

As one of the major causes of mortality and a leading cause of disability in Asia and around the world, stroke presents a serious and growing threat to public health.¹ The World Health Organization (WHO) estimated that 5.7 million deaths from stroke occurred worldwide in 2005.² Moreover, mortality after ischemic stroke has declined in most developed countries over the past few decades.³ That beneficial trend was due to better control of modifiable risk factors and improvements in medical care.⁴

Angiotensin-converting enzyme inhibitors (ACEIs) have shown promising results in decreasing the incidence and severity of ischemic stroke in populations at risk,^{5,6} and in improving ischemic stroke outcomes.⁷ Although high blood pressure is the main modifiable vascular risk factor for ischemic stroke, evidence from previous studies has shown that anti-hypertensive medications can decrease the risk of stroke by other mechanisms in addition to their antihypertensive effects, including neuroprotective properties, beneficial

properties on the endothelium, and an antiatherosclerotic effect.^{5,8}

Generally, there is limited information on mortality after an acute ischemic stroke in hospitalized patients in the region,⁹ and none of these studies have taken into account the effect of previous ACEI use on in-hospital mortality after ischemic stroke attack.

¹Clinical Pharmacy Program, School of Pharmaceutical Sciences, Universiti Sains Malaysia (USM), Penang, Malaysia

²An-Najah National University, Nablus, Palestine

³Clinical Research Centre, Hospital Pulau Pinang, Penang, Malaysia

⁴Clinical Toxicology Program, National Poison Centre, Universiti Sains Malaysia (USM), Penang, Malaysia

Corresponding Author:

Yahaya Hassan, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800, Penang, Malaysia
Email: yahaya@usm.my