



Management of Asthma Exacerbations in Southeast Asian Tertiary Care

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Background: There have been limited reports looking into the care of patients with asthma exacerbations admitted to tertiary hospitals in Southeast Asia. This study aims to determine the extent in which the 2019 Global Initiative for Asthma (GINA) guidelines were being met.

Methods: A retrospective study of patients with asthma exacerbations admitted to the University of Malaya Medical Centre (UMMC) and Pantai Hospital Kuala Lumpur (PHKL), Malaysia from 1 July 2019 to 31 December 2019.

Results: There were significant numbers of patients with previous admissions for asthma in both centres, with almost 50% experiencing an exacerbation in the previous year. Approximately 75% of the patients considered their asthma to be controlled when asked, despite many of them having had a history of acute exacerbations in the previous year. When cross-checked, the level of GINA-defined asthma control remained low, with only 6.4% of the patients deemed to have good control, while asthma was partially controlled in 25.6% of the patients and uncontrolled in 68% of the patients. About 72.1% of the patients reported daytime symptoms, 65.1% of the patients reported night-time symptoms, 70.9% of the patients required frequent usage of rescue inhalers and 72.1% of the patients reported some limitation in their activity prior to the current asthma exacerbation. Almost a quarter of the patients who were admitted had severe or life-threatening exacerbations as defined by GINA. These patients had more hospitalizations in a year and were more likely to have previous admissions requiring non-invasive and invasive ventilation. They were also more likely to be on GINA Step 5 treatment, had a lower mean percent predicted FEV₁ and a higher baseline blood eosinophil count. Multivariate analysis revealed that baseline eosinophil count were independently associated with severe or life-threatening asthma exacerbations (odds ratio: 1.01, 95% confidence interval: 1.00–1.01, p=0.001). Failure to adhere to daily controller medications was high in this study (37.2%).

Conclusion: Although the management of asthma exacerbations in tertiary hospitals in Southeast Asia is largely congruous with international guidelines, there is room for improvement. As there is a marked discrepancy between patient-perceived and guideline-defined asthma control, efforts to increase awareness on the dangers of uncontrolled asthma are warranted.

Keywords: acute care, Southeast Asia, severe asthma, international guidelines, management

Introduction

Asthma is defined by the presence of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough, together with variable expiratory airflow limitation.¹ It is one of the most common chronic conditions in the world, affecting approximately 339 million people worldwide.² In 2015, the Global Burden of Disease collaboration found asthma to be the most prevalent chronic respiratory

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disease worldwide, with an estimate of 400,000 deaths from asthma, which was more than 1000 deaths per day.³ The global prevalence of asthma is projected to increase to more than 400 million by 2025, partly due to a large proportion of the world's population living in urban areas by then.⁴ In Southeast Asia, asthma is one of the common non-communicable diseases.⁵ Although asthma often begins in childhood, asthma symptoms can occur at any time in life with some patients having late-onset asthma experiencing symptoms for the first time at a later stage in life.^{6–8}

Sadly, asthma control remains suboptimal despite the availability of effective controller medications.^{9,10} Poor asthma control is associated with increased risk of exacerbations, impaired quality of life, increased health-care utilisation and reduced productivity.^{9–12} More importantly, a history of asthma exacerbations is a risk factor for future exacerbation; therefore, understanding risk factors is important. Other risk factors for asthma exacerbations include comorbidities such as allergic rhinitis, chronic rhinosinusitis and obesity, poor asthma control and poor treatment adherence.^{13,14}

Many countries have formulated and published their own asthma management guidelines to improve overall asthma care. Despite the availability of international guidelines such as those produced by the Global Initiative for Asthma (GINA), awareness towards acute asthma management may be lacking and real-world data are therefore necessary to look at differing management with the aim of improving the standard of care in individual countries based on local practices. The GINA guidelines are well known in the region and the real-world practice of managing asthma exacerbations was assessed using the 2019 version as a reference.²

This study aimed to evaluate the quality of care of patients who presented to the emergency departments of two tertiary care centres in Southeast Asia for acute asthma exacerbations. The quality of care evaluated included the initial assessment, management of the exacerbation and discharge arrangements, in an attempt to compare real-world practice with other developing countries in Asia, with the hope of finding concepts that may be generalizable to the rest of the world. The study assessed symptoms and levels of asthma control in a real-life setting, and evaluated how symptoms and the severity of acute exacerbations relate to GINA-defined control and different treatment levels.

Methods

This retrospective study included all adult patients admitted to University of Malaya Medical Centre (UMMC) and Pantai Hospital Kuala Lumpur (PHKL) for acute asthma during the period from 1 July 2019 to 31 December 2019. For patients with recurrent admissions, only the first admission for asthma exacerbation during the study period was analysed.

A patient with asthma was defined by having a history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with documentation of expiratory airflow limitation by spirometry with bronchodilator reversibility testing.¹

All adults aged 18 years and above with a prior documented diagnosis of asthma by a physician were eligible for inclusion. Patients without a prior objective spirometry demonstrating reversible expiratory airflow limitation were included if they had the diagnosis confirmed by spirometry testing upon discharge or on follow-up in the outpatient clinic. Patients with newly diagnosed asthma who first presented with an acute exacerbation were also included provided the diagnosis was confirmed in a similar manner. Patients who did not fulfil these criteria were excluded. Informed consent was obtained from all participants prior to data capturing to publish the information gathered in an online open-access publication.

An acute exacerbation of bronchial asthma (AEBA) was an acute or sub-acute worsening in symptoms of shortness of breath, cough, wheezing or chest tightness and progressive decline in lung function, representing a change in the patient's usual status that is sufficient to require a change in treatment.¹ Some patients may present for the first time during an acute exacerbation.¹ Based on severity, the exacerbations were categorised as “moderate” or “severe-to-life-threatening” for analysis. A moderate exacerbation is characterized by a patient who was able to talk in phrases, preferred sitting to lying, appeared not agitated, was not using accessory respiratory muscles, and with an increased respiratory rate, a pulse rate of between 100 and 120 beats per minute, an oxygen saturation of 90–95% on air, and a peak expiratory flow of more than 50% predicted.¹ A severe-to-life-threatening exacerbation was characterized by a patient who was only able to talk in words, sitting hunched forwards, agitated and using accessory respiratory muscles, with a respiratory rate of more than