Analysis of Delayed Intervention for Acute Aortic Syndrome in the Emergency Department

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ABSTRACT

Objective: Accurate identification of aortic dissection or intramural hematoma is a challenge for emergency room physicians. A myriad of symptoms, insufficient sensitivity of physical findings, and a low specificity of chest radiography make a prompt diagnosis difficult. Computed tomographic (CT) scanning is the most common initial diagnostic test in these patients. The purpose of this study was to analyze factors associated with delayed CT intervention in patients with acute aortic syndrome on presentation to the emergency department.

Methods: Clinical records of 122 consecutive patients with acute aortic syndrome (AAS) over 5 years were analyzed for medical history, clinical characteristics, electrocardiography, imaging findings, and outcomes with emphasis on delayed CT intervention.

Results: Delayed CT intervention occurred in 60% (n=73) of patients with AAS. We found that females were associated with higher rates of delayed CT intervention (p=0.02). Patients with a typical presentation of pain characteristics including migratory pain and diaphoresis significantly differed in receiving early CT intervention (p=0.003 and 0.036). The longer duration from the onset of symptoms to arrival at the emergency department was associated with delayed CT intervention (p=0.012). Elevated cardiac troponin level occurred in 11 patients (9%), and electrocardiography demonstrated ST-segment depression in 3 patients (2.4%) and ST-segment elevation with myocardial infarction in 2 patients (1.6%). A final diagnosis of type A dissection was made in 43 patients (35%), and type B dissection in 79 patients (65%). The overall in-hospital mortality rate was 13%.

Conclusions: Delayed CT intervention occurred in 60% of patients with AAS on presentation to the emergency department. Female gender and delaying in presenting to the ED were seen to be relevant to a delayed diagnosis of AAS. ED physicians should have a heightened index of suspicion of AAS in such patients.

Keywords: delayed intervention, acute aortic syndrome, emergency department

INTRODUCTION

Acute aortic syndrome (AAS), which includes aortic dissection, penetration aortic ulcers, and intramural aortic hematomas,¹ is a devastating disease with high morbidity and mortality rates and requires an early diagnosis. The mortality rate of acute aortic dissection of the ascending aorta is 1%~2% per hour after symptoms onset, and uncomplicated descending dissection also has a 30-day mortality of 10% with a risk of progression and sudden death.² A delayed or missed diagnosis of AAS may also lead to inappropriate or harmful treatment.³ Accurate identification of AAS remains a great challenge for emergency room physicians. A variety of presentations, insufficient sensitivity of the physical findings, and a low specificity of chest radiography make a prompt diagnosis difficult.⁴,⁵ Accordingly, from the emergency physician’s perspective, AAS can be promptly diagnosed with typical symptoms. But in some cases, although patients complain of chest pain, back pain, or abdominal pain, if the physician is not aware of the possibility of AAS as the initial impression and delays arranging computed tomographic (CT) scanning, he or she may be misled by the electrocardiographic findings or lab data and choose to look for other causes of the symptoms, thus delaying the diagnosis. This does not even consider patients with painless or atypical presentations. The purpose of this study was to analyze the factors associated with delayed CT intervention in patients with AAS on...