International Journal of Gerontology 9 (2015) 103–106

Contents lists available at ScienceDirect

International Journal of Gerontology

journal homepage: www.ijge-online.com

Original Article

The Clinical Presentation and Correlation, Prognosis in Elderly Aortic Dissection Patients with Hypotension☆

Yu-Jang Su, MD [1, 2, 3, 4 *], Che-Hung Liu, MD [1], Yu-Hang Yeh, MD [5]

[1] Department of Emergency Medicine, Mackay Memorial Hospital, [2] Department of Oral Hygiene, College of Oral Medicine, Taipei Medical University, Taipei, [3] Department of Emergency Medicine, Mackay Medical College, New Taipei City, [4] Mackay Junior College of Medicine, Nursing, and Management, [5] Department of Emergency Medicine, Taipei City Hospital, Zhongxing Branch, Taipei, Taiwan

ARTICLE INFO

Article history:
Received 24 August 2012
Received in revised form
30 November 2013
Accepted 15 August 2014
Available online 14 June 2015

Keywords:
aortic dissection,
elderly,
hypotension,
mediastinum,
mortality

SUMMARY

Background: Aortic dissection (AD) is an emergent cardiovascular disease in the emergency department (ED).
Objective: To investigate the clinical manifestation and outcomes in patients with aortic dissection accompanied by greater mediastinal width (MW) and hypotension status, and make further comparisons.
Methods: We studied retrospectively 127 AD cases in 6 consecutive years from January, 1, 2005 to December, 31, 2010 from the ED. We gathered the data of sex, age, time and season of episodes, medical histories, symptoms, and heart rate at triage, and further assessed MW and hypotensive status, and related them to clinical outcome (died or survival to discharge).
Results: In total, 58 men and 20 women enrolled in this study (mean age, 65 ± 13 years). The MW in the elderly was greater than nonelderly (9.9 ± 1.9 cm vs. 9.4 ± 1.8 cm, $p = 0.04$). AD patients who presented to ED with hypotension have significantly higher D-dimer level, longer hospital stay, and higher mortality rate.
Conclusion: AD and larger MW are associated with being elderly and of hypotensive status. In addition, AD patients with hypotension may have longer hospital stay and higher mortality rate.

1. Introduction

Aortic dissection (AD) is one of the cardiovascular emergencies in the daily emergency practice. It occurs when the aortic intima tears and blood flows into the aortic media forming a false lumen. Risk factors include uncontrolled hypertension, connective tissue disorders, congenital aortic valve disorder, syphilis infection, illicit drug usage, and medial degeneration of aorta. In 1986, widening of mediastinum and abnormal contour of aortic knob were introduced in diagnosing AD[1]. Of AD patients presenting with widened mediastinum 62.6% were Stanford A and 56% Stanford B[2]. There has been no article describing definite mediastinal width (MW) measurement; therefore we investigated the MW of AD patients by means of retrospective review of a 6-year series from a northern Taiwan medical center. MW in different conditions of AD patients was also studied.

2. Materials and methods

2.1. Study design

There are four image tools used to diagnose AD: retrograde angiography; ultrasound, including transesophageal echocardiography; computed tomography (CT); and magnetic resonance imaging. CT is relatively less invasive and more popular. We retrospectively reviewed picture archiving and communication system (PACS; EBM Technology, Honolulu, HI, USA) and parameters of 6-year AD cases from January 1, 2005 to December 31, 2010 in a northern Taiwan medical center. Direct measurement was taken of MW using PACS software (EBM Technology) and comparisons were made with the different groups of AD. All enrolled cases are definitely diagnosed AD, and we excluded cases transferred from or to

☆ Conflicts of interest: All contributing authors declare that they have no conflicts of interest.

* Correspondence to: Dr. Yu-Jang Su, Department of Emergency Medicine, Mackay Memorial Hospital, No. 92, Sec 2, North Chung-Shan Rd., Taipei 10449, Taiwan.
E-mail address: yjsu.5885@mmh.org.tw (Y.-J. Su).

http://dx.doi.org/10.1016/j.ijge.2015.05.008

other hospitals. For standardized measurement, all chest radiographs were taken in supine positions, due to patients being very ill after episodes of AD (Figure 1). This study was approved by the Institutional Review Board of Mackay Memorial Hospital Taipei, Taiwan (15MMHIS077e).

This retrospective study of consecutive 127 cases in 6 years of AD by International Statistical Classification of Diseases and Related Health Problems coding 44100 from January 1, 2005 to December 31, 2010 was designed to evaluate MW. The serial number for retrieving medical records in application is 2482484. Every enrolled case was confirmed AD by CT. We gathered the data of sex, age, time and season of episodes, history of diabetes, symptoms, systolic blood pressure (SBP) and heart rate at triage, type classification of AD (Stanford A and B), and hospital stay (HS), and outcome (died or survival to discharge) for statistical analysis. Forty-nine patients were excluded (2 out-of-hospital cardiac arrest, 9 transferred from other hospital, 36 admitted via outpatient department, 2 transferred to other hospital) to prevent from parameters bias.

Seventy-eight cases with complete data were enrolled in our study. Elderly are patients older than 65 years. We defined daytime as 07:00–19:00, and the night time is 19:00–07:00 of the next day. Seasons are: spring (March, April, May); summer (June, July, August); autumn (September, October, November), and winter (December, January, February). Hypotension was defined as SBP <90 mmHg at triage. Chest pain and chest tightness were defined as chest symptoms; and headache, syncope, and convulsion were classified into cases having neurological symptoms. Elevated D-dimer was defined as concentration >500 μg/L. Mortality cases were defined as in-hospital mortality without survival to discharge. We also made comparisons between hypotension ($n = 13$) and nonhypotension groups ($n = 65$).

2.2. Statistical analysis

Commercial statistical software (SPSS for Windows, version 11.0, SPSS Inc., Chicago, IL, USA) was used for data analysis. The Student t test was used for comparisons of sex and Stanford A and B; the χ^2 test for seasons of episodes and history of diabetes; and Pearson correlation test for age, SBP at triage, and HS statistical analyses, and significance was set at $p < 0.05$ (2-tailed).

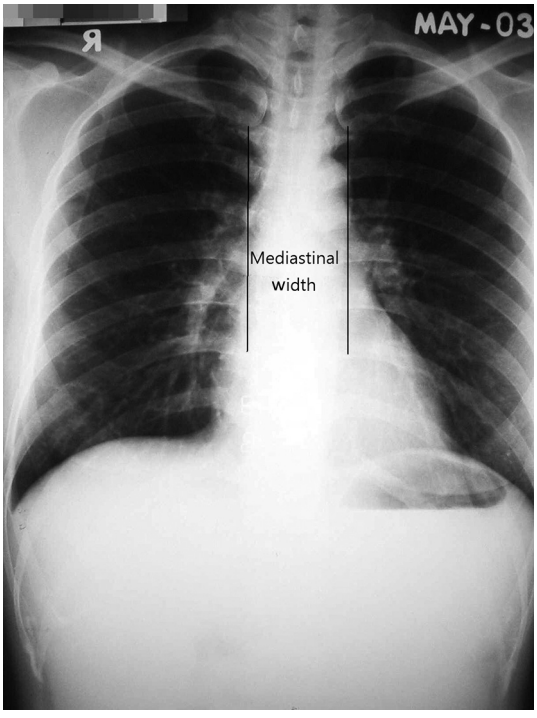

Figure 1. Measurement of mediastinal width from picture archiving and communication system (PACS, EBM technology).

3. Results

There were 58 men and 20 women aged from 33 years to 88 years with a mean ± standard deviation (SD) of 65 ± 13 years, 95% confidence interval (CI) = 34.4–86.6 years. HS ranged from 1 day to 66 days with a mean ± SD of 15 ± 15 days, (CI = 2.6–64.4 days). Nineteen patients died, and the overall in-hospital mortality rate was 24.4%. Basic data are shown in Table 1.

AD most commonly happened in the night (night: day = 58: 42) and winter (winter: spring: summer: autumn = 35: 29: 21: 15, $p < 0.001$). The MW ranged from 6.3 cm to 15 cm with a mean ± SD of 9.7 ± 1.9 cm (CI = 6.5–14.8 cm). The mean MW in men was greater than in women without a significant discrepancy (9.7 cm; CI, 6.5–14.8 cm vs. 9.5 cm; CI, 6.8–14.8 cm; $p = 0.719$). The SBP at triage was >140 mmHg in 28.6% of Stanford A patients and 66.7% of Stanford B patients. AD patients with diabetes had greater MW than those without (10.2 cm; CI, 8.8–11.7 cm vs. 9.6; CI, 6.5–14.8, $p = 0.180$). Pearson correlation analyses gave MW = 11.2 − 0.01 × SBP and MW = 0.3 + 0.01 × age. MW is greater with increasing age ($p = 0.041$) and less with higher blood pressure ($p = 0.021$). Greater MW leads to longer HS (HS = 13.1 + 0.2 × MW; $p = 0.024$). Mortality rate of cases in MW > 9.7 cm was higher than <9.7 cm (27.3% vs. 22.2%, $p = 0.0014$). AD patients with hypotension have more neurologic manifestation and higher D-dimer level, longer HS, and higher mortality rate (Table 2).

Table 1
Basic data of enrolled 78 aortic dissection cases.

Characteristics	Total, n (%) ($n = 78$)
Sex	
Male	58 (74.4)
Female	20 (25.6)
Age	
<65 y	34 (43.6)
≥65 y	44 (56.4)
Season	
Spring	23 (29.0)
Summer	16 (21.0)
Autumn	12 (15.0)
Winter	27 (35.0)
Diabetes	
Yes	7 (9.0)
No	71 (91.0)
Systolic blood pressure at triage	
>140 mmHg	37 (47.4)
90–140 mmHg	28 (35.9)
<90 mmHg	13 (16.7)
Heart rate at triage	
Tachycardia	8 (10.2)
60–100 beats/min	51 (65.4)
Bradycardia	19 (24.4)
Symptoms	
Chest pain/tightness	56 (72)
Abdominal pain	51 (65.4)
Neurologic manifestation	15 (19)
D-dimer > 500 μg/L	45/47 (95.7)
Surgical intervention	33/78 (42.3)
Refusal of operation	3/36 (8.3)
Outcome	
Survival	59 (75.6)
Death	19 (14.4)