

Original Contributions

AORTIC DISSECTION IN THE ELDERLY

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Abstract—To analyze the characteristics of aortic dissection in the elderly, we reviewed 168 cases from January 1999 to September 2005 in a medical center in Taiwan. Fifty-six cases were suitable for enrollment in our study. Of these, 44 (79%) were male and 12 (21%) were female; ages ranged from 29 to 92 years, with a mean of 61 ± 11.75 years. We defined elderly as age ≥ 65 years. There was no obvious discrepancy between age and types of aortic dissections involved ($p = 0.726$). The elderly had the lower mean systolic blood pressure (166.4 mm Hg) upon arrival at the Emergency Department ($p = 0.002$). Presentation to the Emergency Department with chest pain or chest tightness was more commonly seen in the elderly (66.7%) ($p = 0.042$). The mean hospital stay was 12.6 ± 0.5 days, and it was longer in the elderly group (12.96 days) ($p = 0.009$). Otherwise, the mortality rate was $6.7\% \pm 3.6\%$. We found a lower mortality rate in the elderly than in the younger group (4% vs. 9%, respectively; $p = 0.008$). © 2008 Elsevier Inc.

Keywords—aortic dissection; DeBakey classification; chest pain; systolic blood pressure; mortality

INTRODUCTION

Aortic dissection (AD) is a medical emergency with a high mortality rate if appropriate management is not instituted immediately. The essential feature of an aortic dissection is a tear in the intimal layer, followed by formation and propagation of a subintimal hematoma.

Dissections of the thoracic aorta have been classified anatomically by two different systems. The Stanford classification divides dissections into two types, type A and type B. Type A involves the ascending aorta (DeBakey types I and II); type B does not (DeBakey type III). This system also helps delineate treatment. Usually, type A dissections require surgery, whereas type B dissections may be managed medically under most conditions. The DeBakey classification divides dissections into three types. Type I (DTI) involves the ascending aorta, aortic arch, and descending aorta. Type II (DTII) is confined to the ascending aorta. Type III (DTIII) is confined to the descending aorta distal to the left subclavian artery (1). Our objective was to analyze the characteristics of AD in the elderly.

MATERIALS AND METHODS

The Mackay Memorial Hospital (MMH) in Taiwan is a 2000-bed teaching hospital that employs approximately 4500 doctors, nurses, and allied health professionals. The total number of annual visits to the Emergency Department (ED) was approximately 157,000. The clinical data of 168 AD patients diagnosed by the attending cardiologist or cardiovascular surgeon at MMH from January 1999 to September 2005 were retrospectively reviewed. In this article, we grouped the AD patients according to the DeBakey classification. We defined elderly as age ≥ 65 years. Comparisons were done in many aspects to find

Table 1. The Enrolled 56 Aortic Dissection Cases Were Classified by DeBakey Types and Decades of Age

Age (Years)	AD DTI	DTII	DTIII	Total
21–30	0	0	1	1
31–40	0	1	1	2
41–50	4	2	6	12
51–60	1	2	8	11
61–70	2	2	11	15
71–80	2	4	4	10
81–90	0	0	2	2
91–100	1	0	2	3
Total	10	11	35	56

AD DTI = aortic dissection DeBakey type I; DTII = DeBakey type II; DTIII = DeBakey type III.

out the characteristics of aortic dissection in the elderly. Exclusion criteria were chronic aortic aneurysm with dissection, and patients admitted due to other active problems with accidental detection of aortic aneurysm. Of those excluded, the clinical course was chronic, not acute, and aortic dissection was not the major problem. Inclusion criteria were presentation to the ED with aortic dissection identified on contrast-enhanced computed tomography (CT) scan of the chest, and dissections had to be acute, not chronic. Data including patient number, DeBakey classification, age, mean systolic blood pressure (SBP), symptoms presented, mean length of hospital stay, and mortality were collected. T-test analysis was used for the comparisons of the elderly vs. the younger group by Data Analysis Plus® 4.0 (Keller, Warrack, Fourth edition; Worcester, MA); significance was set at $p < 0.05$.

RESULTS

Fifty-six cases met eligibility criteria, including 44 (79%) male and 12 (21%) female patients ranging in age from 29 to 92 years with a mean of 61 ± 11.75 years. Of these, blood pressures were recorded in all four limbs in 36 patients. Of the 56 cases, DeBakey type I accounted for 10 cases (17.9%), type II for 11 cases (19.6%), and type III for 35 cases (62.5%). The overall in-hospital

Table 2. Analysis of the Enrolled 56 AD Cases by Younger Than 65 Years Old and the Elderly

Age (Years)	AD DTI	DTII	DTIII	Total	%
<65	5	7	20	32	57.14
≥65	5	4	15	24	42.86*

* $p = 0.726$.

AD DTI = aortic dissection DeBakey type I; DTII = DeBakey type II; DTIII = DeBakey type III.

Table 3. Mean Systolic Blood Pressure on Arrival to ED in Younger Than 65 Years Old and the Elderly Aortic Dissection Patients

Age (Years)	Mean Arrival SBP (mm Hg)
<65	169.4 ± 35.9 mm Hg
≥65	166.4 ± 45.8 mmHg*

* $p = 0.002$; $p < 0.05$.

SBP = systolic blood pressure.

mortality rate was 7.1% (4 of 56). Numbers of cases by decade, ranked in three types of AD, are presented in Table 1. The elderly group accounted for 24 cases (42.86%). There was no obvious discrepancy between age and types of AD involved ($p = 0.726$) (Table 2). The elderly had the lower (166.4 mm Hg) mean systolic blood pressure (SBP) on arrival at the ED ($p = 0.002$) (Table 3). Presentation to the ED with chest pain or chest tightness was more commonly seen in the elderly (66.7%; $p = 0.042$) (Table 4). The mean hospital stay was 12.6 ± 0.5 days; it was longer in the elderly group (12.96 days; $P = 0.009$) (Table 5). The mortality rate was $6.7\% \pm 3.6\%$. We found the lower mortality rate in the elderly ($p = 0.008$) (Table 6). The mean SBP was higher in DTIII AD than DTII AD (Table 7).

DISCUSSION

Aortic dissection is a critical disorder due to tear of the aortic intima. It is commonly seen in males in the majority of studies published (2–4). In our study, the male:female ratio was 3.8:1, and the majority (67.9%) of cases occurred in the age range from 41 to 70 years. No significant difference was noted between elderly younger patients in type of AD involved.

Hypertension is commonly seen in cases of AD, although hypotension may occur when the cardiac output is decreased after dissection of the aorta. In our study, 75% (42 of 56) of AD patients were hypertensive (SBP > 140 mm Hg) on arrival at the ED. Otherwise, we found that the mean SBP of DTIII (177.7 mm Hg) was higher than DTII (158.1 mm Hg), and higher than DTI

Table 4. Fifty-six Enrolled AD Cases Presented to ED with Chest Symptoms in Younger Than 65 Years Old and the Elderly

Age (Years)	CP/CT	%
<65	18	56%
≥65	16	66.7%*

* $p = 0.042$.

CP/CT = chest pain or chest tightness.

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