Aortic Dissections in the Elderly: Older Age is Associated with Increased Time to Surgery in Patients with Acute Aortic Syndromes

Background

- In the setting of Acute Aortic Syndromes, timely access to definitive surgical repair is of paramount importance
- Older patients, primarily septuagenarians and octogenarians, undergoing emergent Ascending Arch Repair experience higher rates of mortality compared to younger patients
- Despite this risk, studies show that surgical management is still superior to medical management for this patient population

Objective

- The objective of this study is to determine if older age impacts the time from presentation to start of surgery for patients with Acute Aortic Syndromes undergoing surgical repair

Methods

- This retrospective review included all patients with Acute Aortic Syndromes who underwent emergent Ascending Aortic Arch Repair from January 2018 to May 2023 at a single academic institution
- Our analysis compared outcomes for older patients (age 70 years and older) with younger patients (age less than 70 years)
- Primary outcomes included time from Emergency Department presentation to the start of surgery and time from diagnosis with Computerized Tomography to start of surgery
- Secondary outcomes included intraoperative and 30-Day mortality, postoperative stay, and complications
- Outcomes were analyzed using Chi-squared, Fisher's Exact, and t-tests, with significance set at $p<0.05$

Results

- Of 107 patients included, 71 (66%) were under the age of 70 and 36 (34%) were 70 years of age or older
- The younger cohort had more male and non-White patients, with no differences in rates of hypertension, dyslipidemia, and smoking history

Table 1: Baseline Characteristics

Variable	Overall (n = 107)	Older Patients (Age Under 70 years) (n = 71)	Younger Patients (Age 70 years and older) (n = 36)	P-Value
Baseline Characteristics				
Age (years) (Median, IQR)	63 (54 - 74)	58 (50 - 63)	78 (73 - 81)	**<0.001***
Gender (male) n (%)	73 (68%)	57 (80%)	16 (44%)	**<0.001***
Race (White Non-Hispanic) n (%)	66 (62%)	39 (55%)	27 (75%)	**0.040***
Body Mass Index (Median, IQR)	27 (24 - 32)	27 (24 - 33)	28 (23 - 31)	0.370
Comorbidities				
Hypertension n (%)	99 (93%)	64 (90%)	35 (97%)	0.188
Dyslipidemia n (%)	46 (43%)	27 (38%)	19 (53%)	0.145
Smoking History n (%)	41 (38%)	29 (41%)	12 (33%)	0.450
*Indicates significance at $p < 0.05$				

Results

Table 2: Outcomes and Complications				
Variable	**Overall (n = 107)**	**Older Patients (Age Under 70 years) (n = 71)**	**Younger Patients (Age 70 years and older) (n = 36)**	**P-Value**
Outcomes				
Intraoperative Mortality n (%)	6 (6%)	0 (0%)	6 (17%)	**<0.001***
30-Day Mortality n (%)	21 (20%)	5 (7%)	16 (44%)	**<0.001***
Postoperative Length of Stay n (%)	9 (6 - 15)	9 (5 - 16)	8 (6 - 13)	0.397
Perioperative Characteristics				
Transferred from Outside Hospital n (%)	76 (71%)	50 (70%)	26 (72%)	0.846
Time from Presentation to Diagnosis (minutes)	144 (64 - 260)	138 (62 - 235)	182 (103 - 312)	0.196
Time from Presentation to Case Start (minutes)	405 (258 - 654)	385 (255 - 601)	433 (284 - 778)	**0.020***
Time from Diagnosis to Case Start (minutes)	242 (173 - 356)	234 (170 - 351)	262 (201 - 1085)	**0.006***
Case Length (minutes)	278 (239 - 356)	288 (239 - 350)	263 (224 - 346)	0.298
Cardiopulmonary Bypass Time (minutes)	143 (122 - 190)	143 (122 - 190)	139 (118 - 154)	0.472
Circulatory Arrest Time (minutes)	22 (18 - 28)	20 (17 - 25)	24 (20 - 28)	0.107
Aortic Cross-clamp Time (minutes)	92 (75 - 125)	92 (74 - 128)	80 (73 - 92)	0.449
Postoperative Complications				
Postoperative Bleeding Requiring Intervention n (%)	30 (%)	22 (31%)	8 (22%)	0.584
Postoperative Cerebrovascular Accident n (%)	21 (%)	14 (20%)	7 (19%)	0.209
Postoperative Atrial Fibrillation n (%)	27 (%)	19 (27%)	8 (22%)	0.344
Postoperative Pericardial Window n (%)	6 (%)	4 (6%)	2 (6%)	0.545
Postoperative Thoracentesis n (%)	25 (%)	20 (28%)	5 (14%)	0.647
Surgery-Related Emergency Department Visit n (%)	43 (%)	32 (45%)	11 (31%)	0.610
*Indicates significance at $p < 0.05$				

Results

- Older age was associated increased time from presentation to start of surgery (7 hours and 13 minutes vs. 6 hours 25 minutes; p=0.02)
- Older age was associated with increased time from diagnosis to start of surgery (4 hours 22 minutes vs. 3 hours 54 minutes (p= 0.006)
- Older patients had higher rates of intraoperative (0% vs. 17%, p<0.001) and 30-day (7% vs. 44 %, p<0.001) mortality
- There were no differences in length of stay, or in rates of postoperative complications and surgery-related Emergency Department visits

Conclusions

- Patients aged 70 and older experienced delays from time of presentation to start of surgery and from time of diagnosis to start of surgery
- Age should not delay an individual from receiving timely transfer to a tertiary center for higher level of care to better assess the patient’s operative candidacy and determine appropriate treatment