

Sex Difference Analysis after Aortic Dissection from The Houston Aortic Collaborative Experience

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Introduction

- Data on sex-related differences in presentation, management, and clinical outcome in acute aortic dissection (AAD) are sparse, especially for acute type A (AAAD) and acute type B (ABAD) subtypes.

Objective

To determine the effect of sex on AAD presentation, management and outcomes in a large cohort of patients from two major aortic surgery centers

Methods

- We retrospectively reviewed the two-institution clinical data of all consecutive patients treated for AAD from 2000 to 2023.
- Data were analyzed by univariate and multivariable methods for short- and long-term data.
- Cox multivariable analyses were restricted to 3 years' follow-up.

Results

- Overall, 2,269 patients treated for AADs with 1,380 AAAD and 889 ABAD. Median age was 60 years (IQR:50-71); 779 (34%) were women.
- Women were older (63 vs 58 yrs; $P < .001$), had lower baseline renal function (39% vs 26%, $p < .001$) and more genetically triggered aortic disease (11% vs 7%, $P = .008$).
- Clinical presentation is shown in Table. Women had fewer renal (13% vs 18%; $P = .004$), bleeding (13% vs 19%; $P = .001$), and GI (24% vs 28%; $P = .049$) in-hospital complications.

Results

- 30-day mortality was not different between groups (11% vs 13%; $P=.134$).
- There was no significant difference in mid or long-term survival by sex overall, but Kaplan Meir analysis suggest a possible difference in the type A group, notably in the first 3 years (Figure 1, $p<.001$).

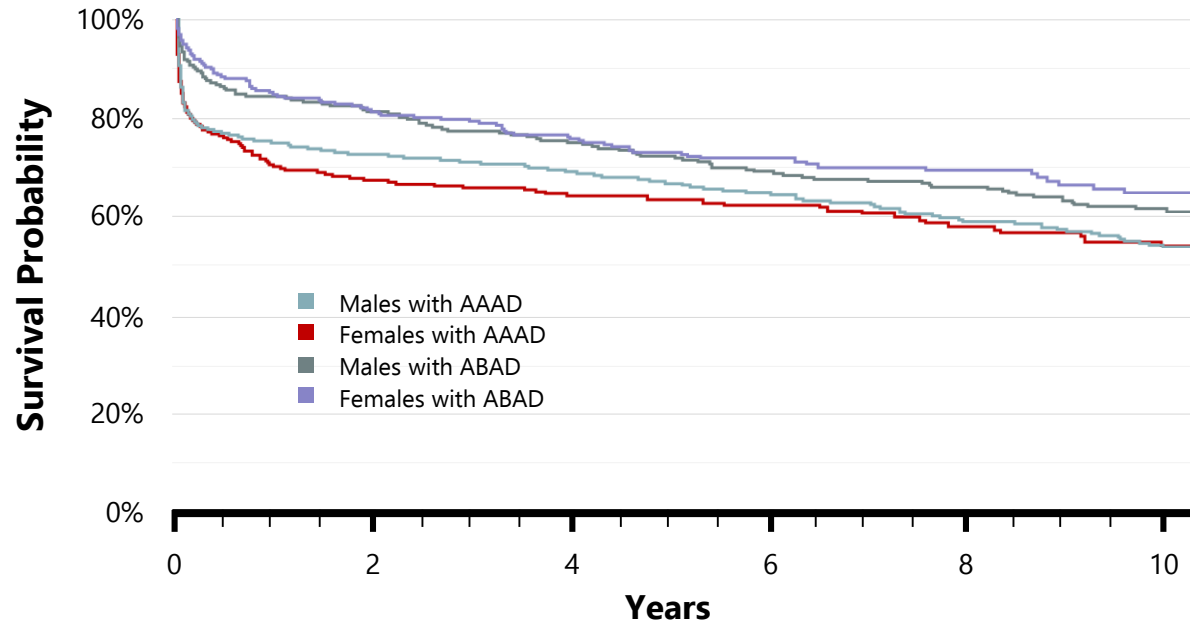
Results

- Among AAAD cases, risk factors for mid (3-years) and long term mortality were examined to assess the independent effect of female sex.
- Absolute risk difference of midterm mortality attributable to COPD in stratified analysis was 15% in women ($p < .01$). Multivariable risk factors for midterm and long-term mortality after AAAD were female (HR 1.4, $p < .02$), rupture (HR 2.0, $p < .001$), CAD (HR 1.7, $p < .001$), mesenteric MPS (HR 2.3, $p < .001$).
- After adjusting for these risk factors, midterm as well as long-term survival among women with AAAD was significantly lower compared to males (Figure 2, $p < .017$).

Clinical Presentation in Acute Aortic Dissection by Sex

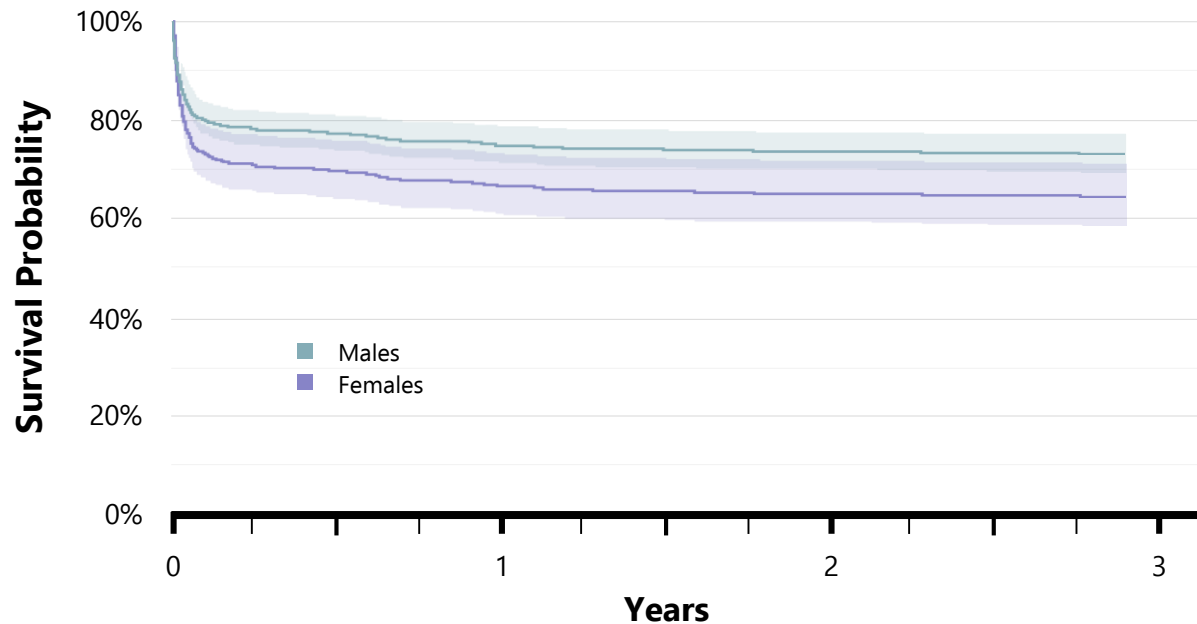
	Overall Cases N (%) 2269	Female N (%) 779 (34.3%)	Male N (%) 1490 (65.7%)	P-Value
Chest Pain	1619 (71.4%)	541 (69.5%)	1078 (72.4%)	0.147
Back Pain	1099 (48.4%)	400 (51.4%)	699 (46.9%)	0.045
Abdominal Pain	566 (24.9%)	165 (21.2%)	401 (26.9%)	0.003
Myocardial Infarction	58 (2.6%)	18 (2.3%)	40 (2.7%)	0.592
Cardiac Tamponade	140 (6.2%)	57 (7.3%)	83 (5.6%)	0.101
Hypotension	354 (15.6%)	124 (15.9%)	230 (15.4%)	0.764
Syncope	128 (5.6%)	48 (6.2%)	80 (5.4%)	0.437
Nausea	413 (18.2%)	158 (20.3%)	255 (17.1%)	0.063
Malperfusion Syndrome	611 (26.9%)	159 (20.4%)	452 (30.3%)	<.001
Cerebral	103 (4.5%)	28 (3.6%)	75 (5.0%)	0.118
Spinal	89 (3.9%)	25 (3.2%)	64 (4.3%)	0.206
Lower Limb	198 (8.7%)	40 (5.1%)	158 (10.6%)	<.001
Upper Limb	63 (2.8%)	9 (1.2%)	54 (3.6%)	<.001
Mesenteric	230 (10.1%)	59 (7.6%)	171 (11.5%)	0.003
Rupture	243 (10.7%)	59 (7.6%)	171 (11.5%)	0.037

Long-term Survival by Dissection Type and Sex



■	819	513	433	322	230	165
■	397	215	161	119	87	64
■	495	360	299	220	165	115
■	300	209	178	139	103	80

Adjusted Mid-term Survival Among AAAD by Sex



Discussion

- In population-based studies on acute thoracic aortic dissection (AD), hypertension and smoking were the main risk factors for incident thoracic AD.
- Other studies in the literature have reported female patients with aortic dissection to present at around 5 years older age than male patients.
- It remains important to consider the diagnosis of ABAD and perform CT imaging in a patient with acute chest pain and no signs of coronary ischemia.

Conclusions

- Women with AAD presented at an older age with poor baseline renal function and had a higher prevalence of genetic disease and ABAD.
- 3-year adjusted survival for women with AAAD was worse than men; COPD may modify risk by sex.
- Independent risk factors for mid and long-term mortality after AAAD included rupture, mesenteric malperfusion, CAD, and female sex.