Females Undertreated for Vascular Disease by Vascular Quality Initiative Analysis

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Introduction

The first annual Women's Vascular Summit highlighted the knowledge gaps in how females present with vascular diseases and how interventions and outcomes may be impacted by sex. In general, compared to males, females tend to have atypical symptoms and present later, which makes accurate prevalence measurements difficult

Objectives

Compare the proportion of operations performed for abdominal aortic aneurysms (AAA), cerebrovascular disease (CVD), and peripheral arterial disease (PAD) by sex.

Methods

- Prevalence of AAA, CVD, and PAD was obtained from the National Institute of Health and the Agency for Healthcare Research and Quality.
- From 2014-2019, procedural data for 6 vascular operations were obtained from the Vascular Quality Initiative (VQI):
  1. Open AAA repair
  2. Endovascular AAA repair
  3. Carotid endarterectomy
  4. Carotid Stenting
  5. Infrainguinal bypass
  6. Endovascular peripheral arterial intervention
- The proportion of females and males undergoing each operation were compared using student t-tests.
- Age, race, and comorbidities were compared using chi-square tests.
- Expected treatment rates were calculated from prevalence data and compared to actual treatment rates.

Results

- Over the last 5 years, 345, 873 procedures were performed; Females accounted for 36% of all procedures.
- No differences in rate of comorbidities between sexes.
- Females were slightly older at time of procedure (mean age 69.9±11.2 vs 69.1±10.3 years, P<0.001)
- Females were significantly less likely to undergo any of these 6 procedures compared to males (P<0.001).
- Based on estimated disease prevalence, females undergo fewer interventions for AAA, carotid stenosis, and PAD than expected compared to males (Table 1).

Table 1: Disease prevalence compared to treatment rate in females.

Disease	Population Prevalence		Repair	Number of operations	Observed % of procedures in Females	Expected % based on disease prevalence
	Females	Males				
Abdominal Aortic Aneurysm (AAA)	1-1.3%	3-7.2%	Open AAA	7,304	25%	12-30%
			Endovascular AAA (EVAR)	35,315	19%	
Carotid stenosis	2.7%	3.8%	Carotid Endarterectomy	90,608	39%	42%
			Carotid Stenting	25,998	36%	
Peripheral Arterial Disease (PAD)	4.3%	4.3%	Infrainguinal bypass	36,410	30%	50%
			Endovascular peripheral arterial intervention	150,238	40%	

Conclusions

1. Females do not get treated at the expected rate based on disease prevalence.
2. The largest disparity is present in operations for PAD.
3. A broader understanding of current vascular practices and sex-specific disease presentation and management are required to explore ways of addressing the sex-disparity in vascular disease care.