Sex Specific Differences in Upper and Lower Extremity Deep Vein Thromboses at a Rural Community Hospital

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Introduction

- Deep vein thrombosis (DVT) is a class of venous thromboembolism (VTE) characterized by the formation of a blood clot in the veins of the upper or lower extremities.[1]
- Doppler ultrasound (US) has both high sensitivity and specificity for DVT and is considered first-line imaging for this condition.[2]
- Lifetime incidence of DVT is unchanged between men and women[3], however, multiple sex-dependent risk factors for DVT exist, including pregnancy, hormone replacement therapy, and hormonal birth control use. Due to these risk factors, women are more likely to develop DVTs during their reproductive years while men are at a higher risk over 50 years of age.
- Location of lower extremity DVTs has been shown to be sex specific, with men presenting with higher proportion in the proximal veins and women presenting with higher proportion in the distal veins. There is no similar correlation with upper extremity DVTs in community settings.[6]
- Few studies explore sex-related differences of DVT location in rural settings. We sought to determine if sex-related differences in DVT location exist in the rural community hospital setting.

Methods

- A retrospective chart review was conducted from 06/01/2019 through 09/15/2020 for all adult (age ≥ 18) patients who received upper or lower extremity doppler US in the Emergency Department at Kingman Regional Medical Center.
- All studies were completed by certified sonographers and interpreted by board-certified radiologists. Patients who underwent only point-of-care US, had recurrent DVT, or had concurrent pulmonary embolism were excluded.

Primary Findings

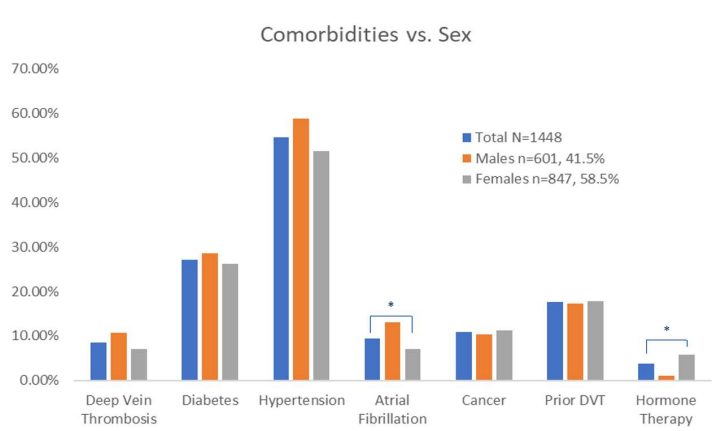

Figure 1 Demographics and comorbidities of patients with and without diagnosis of deep venous thrombosis. * indicates a significant difference below the p<0.005 threshold.

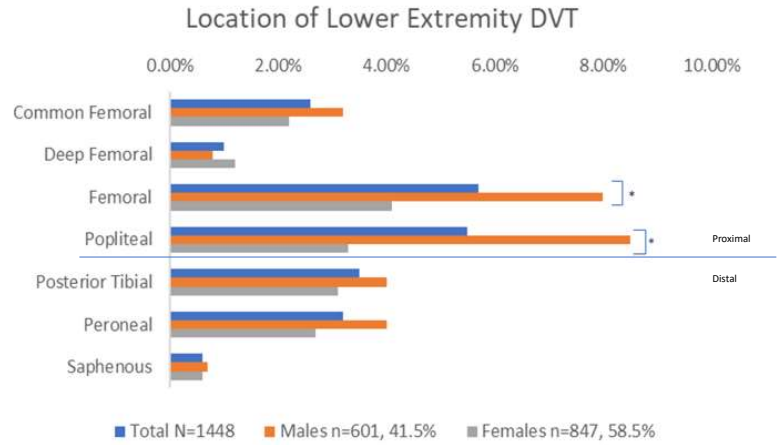

Figure 2 Location of lower extremity DVT in males and females. * indicates a significant difference below the p<0.005 threshold.

Variable	Odds Ratio	95% CI	Significance
Male Sex	1.705	1.146 – 2.537	0.009
Prior DVT	6.421	4.311 – 9.564	0.000

Table 1 Significant variables associated with increased risk of DVT

Results

- 1448 patients received venous duplex US. 58.5% (n=847) were females and 41.5% (n=601) were males. Mean patient age was 61.3 (58.5-64.1) years of age.
- 125 (8.6%) studies were positive for DVT, with 8 (6.4%) located in the upper extremity and 117 (93.6%) in the lower extremity.
  - Males had a higher incidence (p=0.013), greater age at presentation (63.0 vs 59.2, p<0.001), and were more likely to suffer from atrial fibrillation (p<0.001).
- Of the 8 upper extremity DVTs, the average age of patients was 59.6 (56.3-62.9). Each sex was similarly affected (n=4 for both sexes).
  - The most common location was the subclavian vein in males (n=2) and the brachial vein (n=3) in females.
- Of the 117 acute lower extremity DVTs, the average age of patients was 60.9 (60.0-61.8). Males (n = 61, 10.1%) were more likely to have a lower extremity DVT than females (n = 56, 6.6%; p=0.009).
  - The majority (n=78, 67%) of lower extremity DVTs were proximal compared to distal (Figure 2).
  - In males, the popliteal vein (n=51,8.5 %) was the most common location for acute DVT, while the femoral vein (n=35, 4.1%) was the most common location in females.

Conclusion

Sex-specific differences in the location of lower extremity DVT were identified in symptomatic patients, with males being more likely to have a DVT in both the proximal and distal lower extremity vasculature. Given that age and gender were significantly related to DVT presence and location, the authors recommend careful consideration of these factors when evaluating patients at risk for DVT.

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