

equine-derived estrogen are at an increased risk of VTE events. Certain categories of patients, however, appear to be at prohibitive risk.

Risk factors and recurrence rate of primary deep vein thrombosis of the upper extremities

Martinelli I, Vattaglioli T, Bucciarelli P, et al. *Circulation* 2004;110:566-70.

Conclusion: The risk of upper extremity deep vein thrombosis (UEDVT) increases in patients with inherited thrombophilia. Oral contraceptives increase the risk of UEDVT thrombosis only in patients with inherited thrombophilia. The recurrence rate of primary UEDVT is low but tends to be higher in patients with thrombophilia.

Summary: The authors studied 115 cases of primary UEDVT and 797 healthy controls. Patients with UEDVT and controls were investigated for thrombophilia secondary to prothrombin G20210A, factor V Leiden, antithrombin, protein C, protein S deficiency, and hyperhomocysteinemia. Transient risk factors for venous thrombosis were also recorded. Median follow-up was 5.1 years.

The factor V Leiden-adjusted odds ratio (OR) for UEDVT was 6.2 (95% confidence interval [CI], 2.5 to 15.7) and the OR for prothrombin G20210A was 5.0 (95% CI, 2.0 to 12.2). For other anticoagulant protein deficiencies, the OR for UEDVT was 4.9 (95% CI, 1.1 to 22.0). There was no association between oral contraceptives and hyperhomocysteinemia and UEDVT. There were additive effects of oral contraceptives, factor V Leiden, and prothrombin G20210A. In women taking oral contraceptives who also had abnormalities of factor V Leiden or prothrombin G20210A, the OR for UEDVT increased to 13.6 (95% CI, 2.7 to 67.3). Recurrence of UEDVT was 4.4% patient-years in patients with thrombophilia and 1.6% patient-years in patients without thrombophilia. Strenuous muscular effort of the arms was present in only 25% of the patients with primary UEDVT.

Comment: Obviously, patients with primary UEDVT should be investigated for inherited thrombophilia. However, the relatively low risk of recurrence of UEDVT, even in patients with thrombophilia, does not support prolonged or life-long anticoagulation in all patients with UEDVT, regardless of thrombophilia status. Nevertheless, knowledge of the thrombophilia status may be important, especially in women of reproductive age.

Variation in rates of appropriate and inappropriate carotid endarterectomy for stroke prevention in four Canadian provinces

Kennedy J, Quan H, Ghali WA, et al. *CMAJ* 2004;171:455-9.

Conclusion: There is both overuse and underuse of carotid endarterectomy that varies by region. High rates of performance of carotid endarterectomy are associated with a lower rate of appropriate performance of the operation for both surgeons and hospitals.

Summary: The authors identified all carotid endarterectomies performed in the Canadian provinces of Saskatchewan, Alberta, Manitoba, and British Columbia from January 2000 to December 2001. Chart review and expert assessment were used to determine the proportion of procedures that were appropriate, inappropriate, or of uncertain appropriateness according to the RAND-University of California, Los Angeles (UCLA) appropriateness method. The data were analyzed to determine variations and rates of performance of carotid endarterectomy and whether variation was due to differences in surgical volume, surgical specialty, or type of hospital.

The RAND-UCLA appropriateness method determined that 1,656 (52.3%) of the 3,167 carotid endarterectomies were performed for appropriate indications. The proportion of appropriate procedures was 78.2% in Saskatchewan, 58.7% in Alberta, 49.1% in Manitoba, and 46.0% in British Columbia ($P < .001$ across provinces). The rate of appropriate performance of procedures per 100,000 of population varied from 16.2 in Saskatchewan to 44.3 in Manitoba ($P < .001$ across provinces). Carotid endarterectomy was more likely to be appropriate when performed by a neurosurgeon compared with other surgeons (74.4% vs 49.4% $P < .001$), when performed by surgeons doing fewer than 31 procedures over 2 years compared with surgeons doing greater than 31 procedures over 2 years (70.1% vs 49.5%, $P < .001$), and when performed in hospitals doing fewer than 135 procedures yearly compared with hospitals doing more than 135 procedures yearly (63.4% vs 49.1%, $P < .001$). The RAND-UCLA appropriateness method determined that 10.3% of procedures were done for inappropriate reasons.

Comment: There is a complex relationship between uncertainty, overuse, and underuse in the performance of any surgical procedure. It is clearly possible to have both overuse and underuse of a procedure. It is, however,

somewhat disconcerting to note that the appropriateness of carotid endarterectomy in this study was inversely related to surgeon and hospital volume, suggesting that surgeons and hospitals who perform high volumes of carotid surgery do so because of a higher volume of inappropriate operations.

Endovascular aortic repair or minimal incisional aortic surgery: Which procedure to choose for treatment of high-risk aneurysms?

Tefera G, Carr SC, Turnipseed WD. *Surgery* 2004;136:748-53.

Conclusion: Endovascular aneurysm repair (EVAR) and minimal incision aortic surgery (MIAS) give comparable results for the treatment of high-risk patients with aneurysms.

Summary: The authors investigated the comparable efficacy of EVAR and MIAS in the treatment of high-risk patients with infrarenal aortic aneurysms. EVAR was performed using standard techniques. MIAS was performed through a small midline incision (8 to 12 cm) with intra-abdominal visceral retraction. A hand-sewn aortic anastomosis was performed.

This was a retrospective review of patients treated with EVAR or MIAS between 2000 and 2002. Patients were thought to be high-risk based on age >80 years, creatinine >3.0 mg/dL, recent myocardial infarction, history of congestive heart failure, severe pulmonary disease, hostile abdomen, or morbid obesity (BMI >30). Exclusionary criteria for EVAR were an aneurysm neck <1.5 cm in length or >26 mm in diameter, the presence of densely calcified iliac arteries (<6 mm), or a serum creatinine >3.0 mg/dL. Patients were excluded from MIAS for the presence of perirenal abdominal aortic aneurysm, morbid obesity, and aneurysm diameter >10 cm. Data analyzed included demographics, morbidity, mortality, and duration of stay.

Of the 84 patients in the study, 61 were treated with EVAR and 23 were treated with MIAS. The average age was 72 years for MIAS and 74 years for EVAR. The average aneurysm size was 6 cm in both groups. American Society for Anesthesiologists score was 3.0 for MIAS patients and 3.1 for EVAR patients. Two risk factors were present in 52% of EVAR patients and in 30% of MIAS patients. Three risk factors were present in 20% of EVAR patients and in 30% of MIAS patients. Two deaths (3%) occurred in the EVAR group and one (4%) in the MIAS group. Average operative stay was 5.1 days for both groups. Thirty-day morbidity was 18% for EVAR and 17% for MIAS.

Comment: The Wisconsin group has acquired considerable experience with both EVAR and MIAS. The current study suggests EVAR and MIAS are comparable in the high-risk aneurysm population. The authors, however, continue to dance around performance of a randomized trial in their institution. They appear to have both the expertise and the patients to perform such a trial, and it is probably time to do so.

Heparin-associated antiplatelet antibodies increase morbidity and mortality in hemodialysis patients

Murecbe L, Coats RD, Silliman WR, et al. *Surgery* 2004;136:848-53.

Conclusion: Morbidity and mortality are elevated in hemodialysis patients with heparin-associated antiplatelet antibodies (HAAb). Dialysis patients with HAAb should be considered for alternative anticoagulation during hemodialysis.

Summary: Patients on hemodialysis are frequently exposed to heparin. Patient groups with frequent heparin exposure develop HAAb at a high rate. This study sought to define the prevalence of HAAb in hemodialysis patients and to evaluate the potential effects of HAAb in hemodialysis patients. The authors identified all patients undergoing hemodialysis at their institution, 3.7% of whom tested positive for HAAb. These patients were reviewed and compared with a control group consisting of randomly selected hemodialysis patients who tested negative for HAAb. Thromboembolic and hemorrhagic complications were higher in HAAb-positive patients compared with control patients (60% vs 8.7%, $P < .05$). Mortality directly related to thromboembolic or hemorrhagic complications was also higher in HAAb-positive patients (28.6% vs 4.35%, $P < .05$).

Comment: The primary thrombotic morbidity in the dialysis patients with HAAb in this study was thromboses of permanent dialysis access, including both fistulas and grafts. The data suggest that patients with dialysis-access thrombosis should be investigated for HAAb, and if positive, alternative forms of anticoagulation should be considered during hemodialysis.