ABSTRACTS

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To clot or not to clot? That is the question with central venous catheters

Cadman A, Lawrence JAL, Fitzsimmons L, et al. Clin Radiol 2004;59:349-55.

Conclusion: Placement of the tip of a tunneled central venous catheter (CVC) in either the distal third of the superior vena cava (SVC) or the proximal right atrium is superior to more proximal placement of the catheter tip in prevention of catheter-related central venous thrombosis.

Summary: This was a retrospective review of 428 CVCs inserted in 334 patients. The patients were randomly selected for review, and chest x-ray films were obtained after catheter insertion. Follow-up x-ray films and Doppler ultrasound scans were reviewed for venous thrombosis. Total follow-up was 23,040 days (median, 72 days; range, 1-720 days). Venous thrombosis occurred in 5 of 191 CVCs (2.6%) with distal positioning of the catheter tip (distal third of SVC or right atrium), 5 of 95 CVCs (5.3%) with an intermediate catheter tip position (middle third of SVC), and 20 of 48 CVCs (41.7%) with a proximal catheter tip position (proximal third of SVC or thoracic inlet veins). CVCs with tips in a proximal position were 16 times more likely to be associated with venous thrombosis than were those with tips in a distal position ($P < .0005$). No catheter (n = 58) with the tip located in the right atrium became thrombosed or caused complications. There was a 7.8% displacement rate in women, compared with 3.6% in men. Venous thrombosis was more than twice as likely to develop in women in whom CVCs were inserted, compared with men. CVCs inserted through the left subclavian vein were almost 4 times more likely to develop venous thrombosis than those inserted through the right subclavian vein.

Comment: The recommendation for more distal position of CVC tips to prevent catheter-associated venous thrombosis is not new, but deserves emphasis. This study has a number of potential limitations in that no follow-up was recorded in 1 of 3 patients, patient follow-up notes were not reviewed, and clinically suspected venous thrombosis not imaged were not included. Nevertheless, the authors' recommendation for more distal positioning of venous catheter tips to avoid CVC-associated thrombosis likely remains valid.

Long-term prognostic value of asymptomatic cardiac troponin T elevations in patients after major vascular surgery

Kertai MD, Moersma E, Klein J, et al. Eur J Vasc Endovasc Surg 2004;28:59-66.

Conclusion: An elevated perioperative cardiac troponin T (cTn-T) concentration after major vascular surgery is associated with increased all-cause mortality.

Summary: cTnT is both specific and sensitive for myocardial injury. Elevations in cTn-T concentration without persistent or new electrocardiographic (ECG) abnormalities and no clinical evidence of ischemia are common after major vascular surgery. The authors sought to examine the long-term prognostic value of elevated cTn-T levels in patients after major vascular surgery. Between 1996 and 2000, 393 patients who underwent successful aortic or infrainguinal vascular surgery and in whom cTn-T was routinely sampled were followed up until May 2003 (median, 4 years) for all-cause mortality. During this period total creatinine kinase; creatine kinase, myocardial bound; and cTn-T were routinely screened in all patients on postoperative days 2, 3, and 7. Patients with suspected myocardial ischemia were also evaluated with ECG. Elevated cTn-T level was defined as serum concentration >0.1ng/mL in any sample.

Eighty patients (20%) died during follow-up. The all-cause mortality rate was significantly higher in patients with elevated cTn-T levels compared with patients with normal cTn-T levels (41% vs 17%; $P < .001$). This association between elevated cTn-T level and increased all-cause mortality (hazard ratio, 1.9; 95% confidence interval, 1.1-3.1) was independent of baseline clinical characteristics. Elevated cTn-T levels had significant prognostic value in patients with and without renal dysfunction, in patients with transient ECG abnormalities, and in those with abnormal levels of creatine kinase, myocardial bound.

Comment: It is difficult to know how to apply these data clinically. The adverse prognosis imparted by elevated cTn-T levels does not become known until after the patient has undergone the surgical procedure. The findings are interesting, but do not argue for routine screening for elevated troponin levels in patients without symptoms.

Focused high-risk population screening for carotid arterial stenosis after radiation therapy for head and neck cancer

Steele SR, Martin MJ, Mullenix PS, et al. Am J Surg 2004;187:594-8.

Conclusion: Prevalence of carotid arterial disease in patients with previous cervical radiation therapy is sufficiently high that screening for carotid artery stenosis should be routine.

Summary: The authors used a prospectively maintained data base to identify patients who had received cervical high-dose radiotherapy (minimum, 5500 cGy). Patients were then screened with bilateral carotid duplex ultrasonund screening. Duplex findings were divided into those with normal or mild carotid artery stenosis (<50%) and significant carotid artery stenosis (>50%). Relationships between standard demographic risk factors and screening outcomes were also analyzed.

Forty patients with a history of cervical radiation were screened in this study (mean age, 68.2 years; range, 26-87 years). Mean cumulative radiation dose was 6420 cGy (range, 5500-7680 cGy). There was a mean duration of 10.2 years since the last radiation treatment. Duplex ultrasound scans revealed that 40% of patients had significant carotid artery stenosis. Patients with and without significant stenosis were comparable in terms of radiation dose, tobacco use, age, comorbid conditions, and post-radiation intervals (P = NS). Six patients had unilateral carotid occlusion, and 6 patients had greater than 50% bilateral carotid stenosis. Eight patients (7.5%) had sustained a stroke after radiation therapy.

Comment: The authors argue that the prevalence of carotid artery disease after radiation therapy warrants aggressive screening as part of post-radiation care. However, only 3 patients (7.5%) sustained a stroke after radiation therapy. Given the potential increased risk for carotid intervention in patients with previous radiation therapy, and perhaps decreased durability of carotid interventions in patients with radiation therapy, it may be that the authors' data suggest that screening for asymptomatic carotid artery stenosis is not indicated after radiation therapy.

Endoleak after endovascular abdominal aortic aneurysm repair: Implications for duration of screening

Corriere NA, Feurer ID, Becker SY, et al. Ann Surg 2004;339:800-7.

Conclusion: After endovascular abdominal aortic aneurysm repair (EVAR) there is a decreasing risk for detection of endoleak as the number of normal postoperative computed tomography scans increases. Endoleak, however, can be identified as late as 7 years after EVAR, and therefore a reduction in screening frequency for endoleak cannot be recommended at this time.

Summary: There are no current criteria for reducing the frequency of screening imaging studies to detect endoleak after EVAR. The authors collected imaging and follow-up data for 220 patients who underwent EVAR to assess for late endoleak and the risk for development of endoleak over time. Data included preoperative aneurysm diameter, postoperative increase in aneurysm diameter, and number of normal surveillance studies after EVAR.

Endoleak was detected during follow-up in 24% of 200 patients after EVAR. Endoleak was detected on average at19 months (range, 0.4-101 months). At 1, 6, 12, and 24 months endoleak-free survival was 90%, 80%, 77%, and 73%, respectively. An increasing number of normal screening studies was negatively associated with risk for subsequent endoleak development ($P < .001$). An increase in aneurysm diameter was positively associated with risk for endoleak ($P = .04$).

Comment: A major limitation to EVAR is the need for continuous follow-up with imaging studies. This study demonstrates a decreased risk for new endoleak development as the number of normal screening studies increases. However, new endoleaks were discovered as late as 85 months after EVAR. At this time cessation of surveillance for endoleak cannot be recommended.

The metabolic syndrome is associated with advanced vascular damage in patients with coronary heart disease, stroke, peripheral arterial disease or abdominal aortic aneurysm

Olijhoek JK, Van Der Graff Y, Banga J-D and SMART Study Group. Eur Heart J 2004;25:342-8.

Conclusion: In patients with peripheral vascular or coronary disease the presence of metabolic syndrome is associated with increased vascular damage.

Summary: Metabolic syndrome consists of 3 or more of the following: abdominal obesity (waist circumference >102 cm in men or >88 cm in women), hypertension (systolic blood pressure >130 mm Hg diastolic blood pressure >85 mm Hg), hypertriglyceridemia (serum triglyceride concentration >150 mg/dL), low high-density lipoprotein cholesterol