Computed tomographic (CT) appearance of retained fibrin sheaths after central line removal

Abstract:

PURPOSE: Fibrin sheaths may develop around long-term indwelling central venous catheters (CVCs) and remain in place after the catheters are removed. We evaluated the prevalence, computed tomographic (CT) appearance, and clinical associations of retained fibrin sheaths after CVC removal.

MATERIALS AND METHODS: We retrospectively identified 147 adults (77 men and 70 women; mean age 58 y) who underwent CT after CVC removal. The prevalence of fibrin sheath remnants was calculated. Bivariate and multivariate analyses were performed to assess for associations between sheath remnants and underlying diagnoses leading to CVC placement; patients’ age and sex; venous stenosis, occlusion, and collaterals; CVC infection; and pulmonary embolism.

RESULTS: Retained fibrin sheaths were present in 13.6% (20/147) of cases, of which 45% (9/20) were calcified. Bivariate analysis revealed sheath remnants to be more common in women than in men [23% (16/70) vs. 5% (4/77), P=0.0018] and to be more commonly associated with venous occlusion and collaterals [30% (6/20) vs. 5% (6/127), P=0.0001 and
30% (6/20) vs. 6% (7/127), P=0.0003, respectively]. Other variables were not associated. Multivariate analysis confirmed the relationship between fibrin sheaths and both female sex (P=0.005) and venous occlusion (P=0.01).

CONCLUSIONS: Retained fibrin sheaths were seen on CT in a substantial minority of patients after CVC removal; nearly half of them were calcified. They were more common in women and associated with venous occlusion.