Papers

The long term clinical course of acute deep vein thrombosis of the arm: prospective cohort study

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Introduction

The diagnosis and treatment of deep vein thrombosis of the arm are documented extensively.^{1 2} The long term clinical course of the condition is, however, poorly defined.

Participants, methods, and results

Fifty three consecutive patients with a first, symptomatic deep vein thrombosis of the arm, confirmed by ultrasonography or venography—including six cases related to catheter insertion—were treated with high dose heparin, followed by at least three months of warfarin (targeted international normalised ratio 2.0-3.0) (table).

Follow up visits were scheduled after three and six months, and then every six months up to five years. At each visit, patients underwent a clinical evaluation, for which we used a standardised scale previously validated in patients with venous thrombosis in the leg,^{3 4} and an ultrasound assessment of the affected venous segments. Each of five symptoms (heaviness, pain, itching, physical limitation, and paraesthesia) and six signs (pretibial oedema, skin induration, discoloration, venous ectasia, redness, and pain during compression) received a score ranging from 0 to 3. We defined post-thrombotic syndrome as severe in the case of a score higher than 14 and as mild in the case of a score 5-14, on two consecutive examinations. We considered veins as recanalised if they measured less than 2.0 mm in diameter in a single examination or less than 3.0 mm in two consecutive examinations at least three months apart.

Symptomatic recurrent thrombosis in the same arm was diagnosed in case of a (new) intraluminal defect on venography, while symptomatic recurrences in other limbs were diagnosed in case the vein could not be compressed on ultrasonography.^{1 5}

We used Kaplan-Meier estimates to assess the risk of recurrent thromboembolism and post-thrombotic syndrome. We used stepwise Cox regression models to calculate hazard ratios for these outcomes in relation to age, sex, extension of thrombosis (single spot versus axillary or subclavian involvement), modality of clinical presentation (idiopathic versus secondary), thrombophilic status, acquired risk factors of thrombosis, and persistent venous obstruction. All patients gave written informed consent.

Two patients were lost to follow up after two and three years, respectively, and 11 died because of cancer progression, pulmonary embolism, and congestive heart failure.¹ Median follow up was 48.3 months.

Three patients developed a recurrent thromboembolism (recurrence in the same arm in two, and a thrombosis in the leg

Characteristics of the study patients (n=53). Values are numbers (percentages) of patients unless otherwise indicated

Characteristics	
Mean age in years (SD)	44.3 (18.5)
Male sex	31 (58.5)
Location of thrombosis:	
Isolated brachial	4 (7.5)
Axillary vein	6 (11.3)
Subclavian vein	14 (26.4)
Axillary and subclavian veins	29 (54.7)
Concomitant symptomatic pulmonary embolism	6 (11.3)
Risk factors for thrombosis	
Thrombophilia*	12 (22.6)
Unusual exercise	11 (20.7)
Active cancer†	11 (20.7)
Recent (<4 weeks) trauma or fracture	6 (11.3)
Previous leg vein thrombosis	6 (11.3)
Recent (<4 weeks) surgery	3 (5.7)
Outlet thoracic syndrome	3 (5.7)
Obesity	3 (5.7)
Heart failure	2 (3.8)
Oestrogens (% women)	5/22 (22.7)
Pregnancy (% women)	1/22 (4.5)
Combination of inherited and acquired risk factors	9 (17.0)
None	8 (15.1)
Initial treatment	
Unfractionated heparin	43 (81.1)
Low molecular weight heparin	10 (18.9)
No of months of follow up	
Median duration (range)	48.3 (1-60)
Median duration of anticoagulant treatment (range)	3 (1-40)‡

*Factor V Leiden in six patients, deficiency of protein C in three, deficiency of antithrombin in two, and prothrombin gene mutation in one.

†Already known or detected during hospitalisation.

‡Longer than six months in four patients.

in one). The cumulative incidence of recurrent thromboembolism after one, two, and five years was 2.0% (95% confidence interval 0.0 to 5.9), 4.2% (0.0 to 9.9), and 7.7% (0.0 to 16.5), respectively. Thirteen patients developed post-thrombotic syndrome, one severely so. Ten cases occurred within six months, two after one year, and one after two years. The cumulative incidence of post-thrombotic syndrome was 20.8% (9.3 to 32.3) at six months, 25.1% (12.8 to 37.4) at one year, and 27.3% (14.6 to 40.0)

P+ An additional table showing outcomes in patients with and without vein catheters is on bmj.com

at two years. It remained stable afterwards. The incidence of these outcomes in patients with and without vein catheter is shown in table A on bmj.com.

Residual thrombosis was related to the incidence of post-thrombotic syndrome (hazard ratio 4.0, 1.1 to 15.0). Of other potential risk factors, only thrombosis affecting the axillary and subclavian veins was related, albeit not significantly, to the development of post-thrombotic syndrome (hazard ratio 2.9, 0.8 to 10.7).

Comment

Symptomatic deep vein thrombosis of the arm carries a low risk of recurrent thromboembolism. Post-thrombotic sequelae occur in almost one fourth of patients within the first two years and are related to residual thrombosis and, to a lesser degree, to the extent of the initial thrombosis. The rates of recurrent thromboembolism and post-thrombotic syndrome are lower than those observed in cohorts of patients with venous thrombosis of the leg.⁴ Whether the incidence of long term sequelae might be further reduced by physical devices or other methods is worth investigating.

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