Long-term management of Venous Thromboembolism

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Introduction

Deep vein thrombosis (DVT) is not a rare disease. General incidence of DVT is 0.2% of urban population per 1 year. It is very rare in the population of younger than 15 years-old. Older persons have higher incidence of DVT, 1.8 event will occur 1,000 person-year in 65 ~ 69 years-old, and 3.1 on 85 ~ 89 years-old people. One of important complication of DVT, especially in proximal (iliofemoral) DVT is the postthrombotic syndrome (PTS). The incidence of PTS after proximal DVT was 35~70% at 3years in old medical literature. Even in well-designed randomized clinical trials composed with adequate anticoagulation, early mobilization and long-term elastic compression, the incidence of severe grade PTS in proximal DVT is 4~8%. 1 year cumulative risk of PTS is 31% in women, and 15% in men with proximal DVT. Main purposes of proximal DVT are reduction of hemodynamic instability of DVT, and long term follow up plan to reduce incidence of PTS. Recently, there are many of attentions to facilitate acute management for proximal DVT with catheter directed thrombolysis, percutaneous transluminal angioplasty, and anticoagulation, but establishing long-term management plan, imaging and clinical follow up schedule are neglected.

Body

Duration of anticoagulation is very important after acute management in proximal DVT to reduce long-term complication. Venous thromboembolism (VTE) with transient risk factor (surgery, trauma, transient immobilization etc) has very low recurrence risk, so 3 months oral anticoagulation (OAC) will be enough after proper acute VTE treatment. Major VTE related with malignancy case is very hard to decide anticoagulation duration, because they have high incidence of VTE recurrence and high bleeding risk on anticoagulation. Long-term with low molecular weight heparin (LMWH) is much better than warfarin in the aspects of bleeding and VTE recurrence in malignancy. Termination points of anticoagulation in malignancy patients are cure of malignancy or bleeding risk excess compared to thromboembolism. Genetic disorder

involved in hypercoagulable state are indication of indefinitely use of OAC. In the cases of the second VTE, patients with repeated transient risk factors will be enough to use OAC for 3~6 months, otherwise need life-long OAC. The 1st VTE in the absence of temporary or identifiable ongoing risk factors will be indication of 3~6 months OAC. After the 1st episode of proximal DVT, systemic follow-up scheduling is very import to prevent recurrent VTE or PTS. In the Rotterdam Erasmus PTS study showed systemic approach for DVT follow up, at 1, 3, 6 months after proximal DVT, compression therapy with medical elastic compression stocking (MECS) should be used. After the 6 months, annual clinical and imaging check-up will be mandatory. There are major determinant for PTS after DVT. High Villata score at 1month after DVT, the iliofemoral DVT compared to calf venous thrombosis (HR 2.23), higher BMI (HR 0.14 step up in per Kg/m2), previous ipsilateral VT (HR 1.78), older ager (HR 0.20 step up per 10 year old), and female sec are those. There are some scale to estimate severity of affected leg of DVT, and systemic follow-up. The Villata Scale is very easy to apply to follow up. It composed of severity of 5 symptomes (Pain, Cramps, Heaviness, Paresthesias, Pruritus), 6 Clinical signs (Pretibial edema, Hyperpigmentation, Venous ectasia, Redness, Skin induration, Pain on calf compression), and venous ulcer. Gradings are none, mild moderate, and severe with scoring from 0 to 3. PTS will be classified into mid (5~9), moderate (10~14), severe (≥ 15, or venous ulcer). With these scoring system, patient after DVT will be checked during follow up. The major problem of the Villata scale is nonspecific, and no description for number and size of venous ulceration. CEAP (Clinical, Etiological, Anatomical, Pathophysiological) classification by Society for Cardiovascular Surgery, North American Chapter shows class 0 ~ 6 in DVT patients. Class o is no visible or palpable signs of venous disease, 1-telangiectasia or reticular veins, 2-varicose veins; distinguished from reticular veins by a diameter of ≥ 3 mm, 3-edema, 4-changes in skin and subcutaneous tissue secondary to CVD, now divided into 2 classes to better define the differing severity of venous disease, 4a-pigmentation or eczema, 4b-lipodermatoscelrosis or atrophie blanche, 5-healed venous ulcer, 6-venous ulcer. On the basis of CEAP classification, the use of compression treatment, and number/size of ulcer was added to make the VCSS. It is very useful tool in surveillance of PTS over long–time period. There are proven risk factors to predict for PTS after DVT. At the time of diagnosis of DVT, older age, obesity, proximal location of DVT, thrombophilia, varicose vein at baseline, smoking daily before pregnancy, asymptomatic DVT, surgery withih last 3 months, and provoked DVT are risk factors for PTS. Poor INR control, ipsilateral DVT recurrence, residual thrombus burden, incomplete resolution of leg symptoms and signs at 1 month after DVT, OAC (vs LMWH), increased d-dimer, elevated inflammation markers, low physical activity are important risk factors to predict PTS. How we can prevent PTS after DVT episode? Proven primary prevention for PTS is pharmacologic or

mechanical thromboprophylaxis in high risk patients of DVT (IC), secondary prevention is appropriate intensity and duration of OAC to prevent recurrent ipsilateral DVT (IB). And, optimizing anticoagulation composed of appropriate INR with OAC (IB), long-term use of LMWH vs OAC (IIbB), and NOAC vs warfarin (IIbC) is very important measure to prevent PTS

Conclusion

Prolong expect survival, increased number of population with malignancy, increased number of surgery which need immobilization make more incidence of DVT. DVT, especially proximal DVT makes high consumption of medical budget in old age. Furthermore, considerable portion of DVT population will suffer PTS, it is very well-known disease related to severe disabling leg ulcer, and worse quality of life, and major burden of medical cost in advanced age. So, systemic and prolonged clinical and imaging follow-up after appropriate acute treatment including CDT, PTA, even in stenting in iliac vein area, and proper intensity and duration of OAC according to underlying cause of DVT is very important to save medical burden and improving quality of life in patients. Rehabilitation under the leading of experienced doctor or paramedical personnel, and appropriate use of MECS are very important measure to reduce leg swelling and PTS.

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