Incidence, Characteristics and Treatment Outcomes of Cancer-associated Venous Thromboembolism in Thai Patients: A Retrospective Matched Case-control Study

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Background: Cancer-associated venous thromboembolism (CAT) is a leading cause of death and associated with poor survival in patients with cancer. However, the incidence and outcomes of Thai patients with CAT have not been well studied.

Objective: We aimed to review the incidence rate and examine the outcomes of patients with CAT in a retrospective matched case-control study.

Methods: Data of adult patients, aged 18 years or older, with diagnosis of either solid or hematologic malignancies actively treated from January 2011 to December 2015 were identified through Thammasat University Hospital database. CAT was defined as acute symptomatic or incidentally detected venous thromboembolism (VTE) diagnosed within 1 year before or after active cancer treatment. Demographic data and outcomes of patients with CAT and 1:1 age, stage (limited or advanced), and cancer type matched control cancer patients without CAT were compared.

Results: A total 2,291 active cancer cases were identified. CAT was found in 83 cases including 46 cases with DVT, 6 cases with PE, 14 cases with other sites, and 17 cases with more than 1 site of VTE. The incidence rate of CAT was 7.2 cases per 1000 patient-years. The majority of CAT cases had hematologic malignancies (69 cases, 83%). Sixty-six of 83 cases were treated with anticoagulants. Minor and major bleeding was seen in 7 cases (8.4%) and 3 cases (3.6%), respectively. Recurrent VTE occurred in 2 cases (3%). Median duration of follow-up among survivors was 36 months (range 1-58). Demographic data were not statistically different between CAT and control groups. When comparing to the control group, patients with CAT had a shorter overall survival (OS; 30% vs 62.7% at 5 years, P<0.0001) and progression-free survival (PFS; 16.9% vs 46% at 5 years, P<0.0001) which related to a higher treatment-related mortality (26.2% vs 13% at 1 year, P=0.004) and relapse rate (cumulative incidence at 5 years of 63.3% vs 43.5%, P=0.002).

Patients with more than 1 site of CAT had significantly lower OS (17.5%) compared with those with only DVT (28.7%) or PE alone (44.4%). In multivariable analysis, independent factors for poor OS were development of CAT (HR 3.9, 95%CI 2.2-7.0, p<0.001) and advanced stage cancers (HR 6.9, 95%CI 2.7-17.7, p<0.001).

Conclusion: Development of VTE in patients with cancers can negatively affect survival and cancer relapse, as well as increase treatment related mortality. Effective strategies to prevent this condition are thus recommended to help improve outcomes.

Keywords: Cancer-associated venous thromboembolism, Deep vein thrombosis, Pulmonary embolism