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ORAL ABSTRACTS

332.THROMBOSIS AND ANTICOAGULATION: CLINICAL AND EPIDEMIOLOGICAL

Bleeding and Thrombotic Outcomes in Adults with Cancer-Associated Splanchnic Vein Thrombosis and Thrombocytopenia

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Introduction:
Splanchnic vein thrombosis (SVT) can arise as a complication in patients with underlying cancers, especially gastrointestinal malignancies, as well as other comorbidities such as liver disease. In patients with cancer-associated thrombosis, thrombocytopenia is a common co-occurrence that can complicate management decisions around anticoagulation. Data on the optimal management of SVT in patients with malignancies is limited, and the risk of bleeding and recurrent thrombosis in patients with cancer-associated SVT and thrombocytopenia is unclear.
Methods:
We identified patients with radiographic diagnosis of cancer-associated SVT at our institution between 2010 and 2021. Exclusion criteria included squamous and basal cell carcinomas and myeloproliferative neoplasms. We manually reviewed all medical records to determine baseline clinical data and clinical outcomes. We performed log-binomial regression to identify independent risk factors for major bleeding, using age at thrombosis (continuous), gender, prior major bleed, baseline creatinine (continuous), use of antiplatelets, and use of anticoagulants as covariates. We present these data as adjusted risk ratios (RR) and 95% confidence intervals (CI). We subsequently used Cox models with inverse probability of treatment weighting with propensity scores for thrombocytopenia (platelet count less than 100,000/uL within 15 days before or after diagnosis of SVT) to calculate hazard ratios (HR) and 95% CIs for our outcomes of interest. Independent variables used in propensity scoring included all variables included in the adjusted models plus type of cancer (hematologic, solid tumor). Outcomes included major bleeding, clinically relevant non major bleeding (CRNMB), clinically relevant bleeding (major bleeding + CRNMB), progression and recurrence of SVT, and development of usual-site VTE (DVT or PE) up to one year following the initial SVT. Progression was defined as extension of the thrombus contiguously into a new vein, and recurrence was defined as a new interval thrombus which was non-contiguous with the initial thrombus.
Results:
A total of 581 patients with cancer and SVT were identified. Baseline demographics, clinical history, laboratory data, and details of SVT are shown in **Table 1** . Of note, 44.2% of patients had cirrhosis, and the most common cancer types were hepatobiliary (55.2%) and pancreatic (22.0%); 40.7% of patients had metastatic disease. Of 512 patients with available platelet count data, 39.5% of patients had platelet count <100,000/uL; of these 512, 14.1% were <75,000/uL, and 12.7% were <50,000/uL. Most (70.6%) SVT were bland thrombi based on radiology interpretation, 19.9% were tumor thrombi, and 5.5% were mixed type, with the remainder being of uncertain etiology. Survival at one year was 41.5%, and median follow-up time was 5.5 months (interquartile range: 1.4-22.2). Only 4.0% of patients received a thrombectomy, and 39.2% were treated with anticoagulation within two weeks of diagnosis.
The cumulative incidence of major bleeding event within one year of SVT diagnosis was 11.0% (95% CI: 8.5-13.5). This was primarily upper GI bleeding (70.3% of major bleeds). Multivariate regression analysis identified only male gender as an independent predictor of major bleeding (aRR: 0.91, 95% CI: 0.84-0.99), as shown in **Table 2**. In the propensity score-weighted Cox models, thrombocytopenia was not associated with an increased risk of major bleeding within one year (aHR: 1.65, 95% CI: 0.32-8.41). The cumulative incidence of CRNMB at one year was 6.7% (95% CI: 4.7-8.7), and cumulative incidence of clin-

ically relevant bleeding was 17.7% (95% CI: 14.6-20.8). The cumulative incidence of progression or recurrence of SVT at one year was 16.3% (95% CI: 13.3-19.3). In the weighted Cox models, patients with thrombocytopenia did not impact the risk of progression or recurrence of SVT (aHR: 1.15, 95% CI: 0.58-2.26). The cumulative incidence of usual-site VTE at one year was 5.7% (95% CI: 3.8-7.5).
Conclusion:
Thrombocytopenia was a common co-occurrence in cancer-associated SVT. Major bleeding- especially upper GI bleeding- was a common complication of cancer-associated SVT. Recurrent or progressive SVT was also frequent, which highlights the challenges of optimal management in this high-risk population. We found that thrombocytopenia was not an independent risk factor for major bleeding in this population.

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Table 1: Baseline demographic, clinical, and laboratory characteristics.

Characteristic	N=581 n (%)
Age at thrombosis (years)—mean ± SD	64.4 ± 11.4
Gender	
Female	211 (36.4)
Male	368 (63.6)
Comorbidities	
Cirrhosis	257 (44.2)
Other liver disease	86 (14.8)
Prior major hemorrhage	67 (11.5)
Abdominal surgery in past 3 months	35 (6.0)
Cancer diagnosis*	
Hepatobiliary	321 (55.2)
Pancreatic	128 (22.0)
Colon	31 (5.3)
Lymphoma	23 (4.0)
Stomach	17 (2.9)
Breast	15 (2.6)
Leukemia	13 (2.2)
Other	72 (12.4)
Tumor stage (n=570)	
Local	133 (23.8)
Locally advanced	199 (35.5)
Metastatic	228 (40.7)
Type of SVT	
Bland	408 (70.6)
Tumor	115 (19.9)
Mixed	32 (5.5)
Uncertain	23 (4.0)

SD, standard deviation
*Patients can have multiple diagnoses, and thus totals may sum to more than 100%

Table 2: Multivariate analysis for major bleeding within one year of SVT diagnosis.

Characteristic	Unadjusted RR (95% CI)	Adjusted* RR (95% CI)
Age at thrombosis >65 years	0.66 (0.41–1.07)	0.95 (0.85–1.05)
Male gender	2.76 (1.48–5.17)	0.91 (0.84–0.99)
Cirrhosis	0.98 (0.62–1.56)	1.01 (0.93–1.10)
Abdominal surgery within past 3 months	1.04 (0.40–2.70)	0.97 (0.84–1.12)
Prior major bleed	1.42 (0.76–2.65)	0.98 (0.86–1.11)
Baseline creatinine >1.0	1.46 (0.89–2.41)	0.94 (0.82–1.09)
Recent systemic chemotherapy	0.93 (0.51–1.68)	1.04 (0.92–1.17)
Use of antiplatelets at baseline	1.50 (0.89–2.51)	0.96 (0.89–1.11)
Tumor vs. bland/mixed thrombus	1.22 (0.71–2.10)	0.98 (0.87–1.11)
Completely vs. partially-occlusive thrombus	1.67 (0.98–2.83)	0.90 (0.79–1.04)
Anticoagulation vs. no anticoagulation	1.77 (0.83–3.80)	0.93 (0.79–1.08)
Thrombocytopenia		
None	Ref	Ref
Platelets <100,000	1.09 (0.53–2.24)	DNC
Platelets <75,000	0.37 (0.12–1.17)	DNC
Platelets <50,000	1.36 (0.71–2.61)	DNC
Thrombocytopenia		
None	Ref	Ref
Platelets <100,000	1.09 (0.65–1.81)	1.02 (0.93–1.11)
Vessel involvement		
Single	Ref	Ref
Multiple	0.92 (0.52–1.64)	1.01 (0.93–1.09)

*Adjusted for age at thrombosis (continuous), gender, prior major bleed, baseline creatinine (continuous), use of antiplatelets, use of anticoagulants
DNC, does not converge

Figure 1

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