Catheter-Related Thrombosis in Oncology: Analysis of 803 Long-Term Central Venous Catheters

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Introduction

Central venous catheters are essential in oncology patients. However, they are associated with potential complications, including catheter-related thrombosis (CRT) which can impact treatment continuity, increase morbidity and require additional interventions.

Objective

To evaluate the incidence of catheter-related thrombosis (CRT) and identify associated risk factors in oncology patients with long-term CVCs (PICCs and CICCs).

Methods

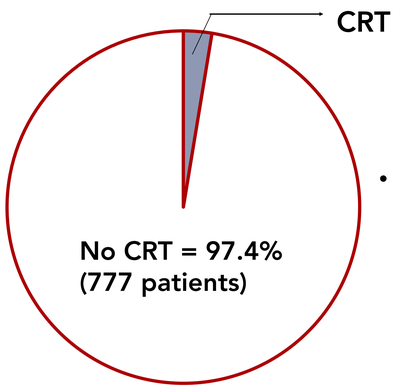
Study design: Retrospective analysis of a prospective database (unicentric)
Population: Oncology patients with long-term CVCs (PICCs and CICCs)
Period: January–December 2021
Exclusion: Catheters removed in less than 30 days

Outcomes: Primary: incidence of CRT

Diagnosis: clinical suspicion + imaging confirmation

Procedure details:
Ultrasound-guided insertion (all cases)
Tip confirmation by radiography

Results



- CRT led to catheter removal in 5 patients (24%) and 17 patients (81%) required long term anticoagulation.

- Catheter dwell time (median, IQR):
  - CICC: 9 (4-10) months
  - PICC: 3 (2-7) months

- Time to thrombosis (median, IQR):
  - CICC: 4.5 (1-12) months
  - PICC: 4 (3-6) months

Univariate analysis			
	CRT (n=21)	No CRT (n=777)	
Sex, n(%)			p=0.150
Male	12 (57.2%)	322 (41.4%)	
Age, median (IQR)	52 (46-59)	60 (48-78)	p=0.094
BMI, median (IQR)	25.9 (21.8-30.7)	25.1 (22.2-29.2)	p=0.868
Smoker, n(%)	8	262	p=0.676
Diagnosis, n(%)			p=0.154
Breast cancer	2 (9.5%)	191 (24.6%)	
Leukemia and Lymphoma	8 (38%)	137 (17.6%)	
Upper GI cancer	2 (9.5%)	99 (12.7%)	
Metastatic disease, n(%)	6 (28.6%)	265 (34.1%)	p=0.518
History of thrombosis, n(%)	1 (4.8%)	43(5.5%)	p=0.878
History of previous central catheter, n%	**7 (33.3%)**	**95 (12.2%)**	**p=0.005**
Catheter, n(%)			**p=0.034**
CICC	**10 (47.6%)**	**539 (69.4%)**	
PICC	**11 (52.4%)**	**238 (30.6%)**	

Multivariate analysis			
	OR	CI (95)	
History of previous central catheter	**3.2**	**1.25-8.25**	**p=0.015**
Catheter (CICC vs PICC)	0.65	4.23-1.02	p=0.061

Discussion & Conclusion

Catheter-related thrombosis is a relevant complication in oncology patients with long-term central venous catheters. In our study, the overall incidence of CRT was low. **PICCs were not associated with increased risk of CRT in multivariate analysis.** The only variable with an **independent association with thrombosis** was **previous history of central catheter placement**, suggesting a local predisposition.

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