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FACTORS INFLUENCING THE USE OF THROMBOPROPHYLAXIS IN CANCER OUTPATIENTS: CAT AXIS, A CASE-VIGNETTE STUDY ON CLINICAL PRACTICE.

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ABSTRACT

Introduction
Data on long-term venous thromboembolism (VTE) prophylaxis in cancer outpatients remain scarce.
Objectives
In the absence of consistent treatment guidelines, our objective was to describe clinical practice and to identify factors influencing the use of thromboprophylaxis.
Methods
CAT AXIS was a multicenter cross-sectional study based on the completion of physician-profile questionnaires and the assessment of 10 e-mailed credible clinical scenarios of lung, colon and breast cancer by each of participants using the case-vignettes validated method.
Results
A total of 224 physicians participated allowing the completion and the analysis of 2,085 reviewed case vignettes corresponding to 765, 703 and 617 fictive clinical scenarios on lung, colon and breast cancers, respectively. The overall rate of thromboprophylaxis was 680/2085 (32.6%) among participants with a comparable proportion for the three types of cancer. Based on patient's characteristics, multivariate analyses revealed that ECOG index, metastatic malignancy, chemotherapy and history of thrombosis were significantly associated with the therapeutic decision in most situations excepted chemotherapy and history of VTE in breast cancer and metastatic malignancy in lung cancer. After adjustment to physician's profile, the multivariate analysis revealed similar results except history of VTE in breast cancer and metastatic lung cancer, both significantly associated with the use of thromboprophylaxis
Conclusion
In the absence of clear guidance, the use of thromboprophylaxis remains low and rather empiric even though the selection of LMWH by the majority of participants and treatment duration seems appropriate based on available data to date. Specific guidelines with corresponding awareness are required.

METHODS

CATAXIS
Objectives

- ✓ To describe the mangement of thromboprophylaxis in outpatients with cancer (lung, colon, breast) who receive long-term antineoplastic treatment
- ✓ To evaluate the proportion of physicians using thromboprophylaxis and to describe selected therapies
- ✓ To identify factors associated with the decision to use thromboprophylaxis.

CATAXIS
Methods

- ✓ French cross-sectional multicenter study based on validated case-vignettes methodology*.
- ✓ Each participant managing patients with cancer to receive via internet 10 fictive but realistic clinical cases (case-vignettes) organ-specific (lung, colon, breast)
- ✓ Cases-vignettes developed by the randomization of patient-related criteria.
- ✓ Thromboprophylaxis-related data recorded on a remote internet server either from participant's institution or at home from their personal computer.

** Peabody; Ann Intern Med. 2004;141:771-80.*

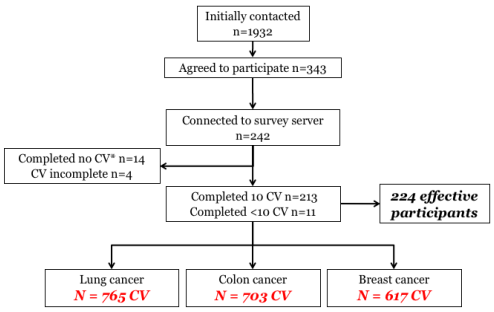
RESULTS

Results

Factors distribution in cases-vignettes (n = 2085)

Criteria	%	Total (%)
Age (<75 ; ≥75)	47.7 ; 52.3	100
BMI (<30 ; ≥30)	50.3 ; 49.7	100
ECOG index score (0-2 ; 3-4)	50.6 ; 49.4	100
Cancer stage (local; metastatic)	47.7 ; 52.3	100
Antineoplastic treatment:		
Chemotherapy only	42.5	100
Chemotherapy + targeted therapy	25.2	
Targeted therapy only	17.4	
Hormon therapy only	11.9	
Hormon therapy + targeted therapy	3.0	
Khorana score (<3 ; ≥3)	65.6 ; 34.4	100
Hemoglobin (<10 g/dl; ≥10 g/dl)	50.6 ; 49.4	100
History of venous thrombosis (yes; no)	50.5 ; 49.5	100

CATAXIS *Flow-chart of participants* ***(n=224)*** *contribution and number of case-vignettes (CV) completed* ***(n=2085)***



Thromboprophylaxis prescription by type of cancer

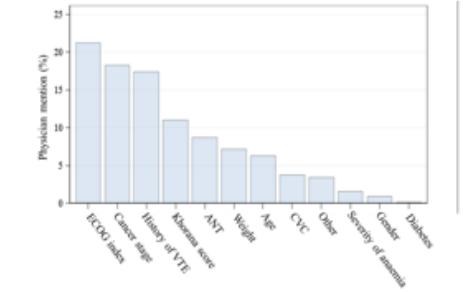
Case-vignettes completed (N)	Poumon 765	Côlon 703	Sein 617	Total 2085
Thromboprophylaxis N (%)	**247 (32.3)**	**240 (34.1)**	**193 (31.3)**	**680 (32.6)**
Anticoagulant n (%)				
DOAC	6 (2.4)	4 (1.7)	2 (1.0)	12 (1.8)
Fondaparinux	12 (4.9)	6 (2.5)	8 (4.1)	26 (3.8)
VKA	0 (0.0)	0 (0.0)	**16 (8.3)**	16 (2.4)
LMWH	**229 (92.7)**	**225 (93.8)**	**162 (83.9)**	**616 (90.6)**
Other	0 (0.0)	5 (2.1)	5 (2.6)	10 (1.5)
Treatment duration n (%)				
On month	18 (7.3)	17 (7.1)	2 (1.0)	37 (5.4)
≥3 months	**185 (75.1)**	**174 (72.5)**	**147 (76.2)**	**506 (74.4)**
During all the ANT	**43 (17.5)**	**40 (16.7)**	**44 (22.8)**	**127 (18.7)**

DOAC: direct oral anticoagulants; VKA vitamin K antagonists;
LMWH: low-molecular-weight heparin; ANT: antineoplastic treatment

Participants profiles by most frequently managed cancer

Characteristic	Lung N=82	Colon N=79	Breast N=63	Total N=224
Age (years), mean(SD)	44.1 (9.9)	41.1 (7.8)	39.0 (9.9)	41.6 (9.4)
Hommes	51 (62.2)	50 (63.3)	25 (39.7)	126 (56.3)
Femmes	31 (37.8)	29 (36.7)	38 (60.3)	98 (43.8)
Années d'exercice, moy. (DS)	14.7 (9.7)	11.1 (6.6)	11.1 (9.4)	12.4 (8.8)
Practice institution n(%)				
General hospital	53 (64.6)	52 (65.8)	26 (41.3)	131 (58.5)
University hospital	24 (29.3)	24 (30.4)	22 (34.9)	70 (31.3)
Anti-cancer center	**5 (6.1)**	**3 (3.8)**	**15 (23.8)**	23 (10.3)
Specialty n(%)				
Oncology	**24 (32.4)**	**38 (48.7)**	**57 (93.4)**	119 (55.9)
Gastro-enterology	2 (2.7)	**40 (51.3)**	0 (0.0)	42 (19.7)
Gynecology	0 (0.0)	0 (0.0)	4 (6.6)	4 (1.9)
Pneumology	**48 (64.9)**	0 (0.0)	0 (0.0)	48 (22.5)
Missing data	8 (9.8)	1 (1.3)	2 (3.2)	11 (4.9)

Factors mentioned by participants as associated with the decision to use thromboprophylaxis in their usual practice



VTE=venous thromboembolism; CVC=central venous catheter; ANT = anti-neoplastic treatment

Factors influencing the use of thromboprophylaxis
Multivariate analysis based on patients characteristics

	Lung cancer		Colon cancer		Breast cancer	
	RR [IC 95%]	p	RR [IC 95%]	p	RR [IC 95%]	p
ECOG score 3 vs 0-2	3,3 [2,4; 4,6]	<0,01	2,4 [1,7; 3,6]	<0.01	2,2 [1,5; 3,1]	<0,01
Chemo + TT vs TT only	2,1 [1,3; 3,6]	0,01	2,2 [1,2; 3,9]	0.012	1,6 [0,8; 3,2]	**0,17**
Chemo only vs TT seule	2,8 [1,5; 5,2]	0,01	2,1 [1,2; 3,8]	0.015	1,1 [0,6; 1,9]	**0,84**
History of VTE: yes vs no	1,9 [1,3; 2,5]	<0,01	1,7 [1,2; 2,4]	<0.01	1,3 [0,9; 1,9]	**0,10**
Cancer stage: metastatic vs local	1,6 [0,9; 2,7]	**0,09**	*		2,3 [1,5; 3,5]	<0,01

OR: odds ratio
CI: confidence interval
Chemo: chemotherapy
TT: targeted therapy
VTE: venous thromboembolism

*cancer colon stage not included in the multivariate analysis

CONCLUSIONS

- ✓ Factors most frequently mentioned as influencing the use of thromboprophylaxis in usual practice were ECOG index, cancer stage, history of VTE, Khorana score and antineoplastic treatment
- ✓ Thromboprophylaxis was considered by 32.6% of participants in cancer outpatients, with comparable rate for the 3 types of cancer
- ✓ LMWH is the preferred anticoagulant for thromboprophylaxis for 90% of participants
- ✓ Thromboprophylaxis duration for 3 months or more was considered by the majority of participants (74.4%)
- ✓ Thromboprophylaxis was markedly underused for all te duration of the antineoplastic treatment
- ✓ ECOG score, antineoplastic treatment, history of VTE and cancer stage significantly influenced the decision to use thromboprophylaxis in all cancers excepted antineoplastic treatment in breast cancer and cancer stage in lung cancer
- ✓ Other factors had no influence on the therapeutic decision including the Khorana score