Impact of pharmacist led intervention on the bleeding and recurrence of VTE, using DOACs vs LMHW among cancer patient; A single Centre study.

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OBJECTIVE

This study aims to assess the effects of pharmacist-led interventions on risk of bleeding or VTE recurrence among cancer patients, emphasizing the potential role of pharmacists in mitigating these risks.

METHODOLOGY

- A cross-sectional study was conducted among 210 cancer patients undergoing anticoagulation therapy.
- Data was analyzed to explore associations between clinical variables, including type of anticoagulant, type of cancer, comorbidities, and the occurrence of bleeding or VTE recurrence.
- The data was accessed from hospital information systems (HIS) from January 1st, 2019, to December 30th, 2023
- Statistical significance was assessed using p-values, with a threshold of 0.05.
- The study got ethics approval from Institution Review Board (IRB) of Shaukat Khanum memorial Cancer Hospital

RESULTS

- Among the 210 participants, 34.3% (n = 72) experienced bleeding or recurrence of VTE, while 65.7% (n = 138) did not. Subcutaneous anticoagulants were significantly linked to higher incidences of these events (77.8%) compared to oral anticoagulants (22.2%) (p = 0.0178).
- Metastasis, obesity, and chemotherapy-related risks did not significantly influence outcomes. Pharmacist-led interventions were pivotal in optimizing anticoagulation therapy, reducing the odds of bleeding and recurrence (OR: 0.147, p = 0.0282).
- Pharmacists provided tailored management, ensuring appropriate dosing, monitoring, and patient education, and significantly enhancing patient safety, especially in high-risk populations like those on subcutaneous anticoagulants or with metastatic cancer.

Table 1: Clinical Characteristics

Variable		Total (n)	Bleeding & Recurrence of VTE		P Value
			Yes	No	
Type of Anticoagulants	Subcutaneous	141	56 (77.8%)	85 (61.6%)	0.0178*
	Oral	69	16 (22.2%)	53 (38.4%)	
Type of Cancer	Head & CNS	13	1 (1.4%)	12 (8.7%)	0.0351*
	Breast & Gynecology	81	30 (41.7%)	51 (40%)	
	Gastrointestinal	60	16 (22.2%)	44 (31.9%)	
	Genitourinary	35	17 (23.6%)	18 (13%)	
	Others	21	8 (11.1%)	13 (9.4%)	
Comorbidities					
Diabetes Mellitus	Yes	31	7 (9.7%)	24 (17.4%)	0.137
	No	179	65 (90.2%)	114 (82.6%)	
Cardiovascular Disease	Yes	39	10 (13.9%)	29 (21%)	0.2075
	No	171	62 (86.1%)	109 (79%)	
Others	Yes	10	4 (5.6%)	6 (4.35%)	0.6965
	No	200	68 (94.4%)	132 (95.6%)	
Duration Of Anticoagulants	3 Months	63	18 (25%)	45 (32.6%)	0.181
	6 Months	74	23 (31.95)	51 (37%)	
	> 6 months	73	31 (43%)	42 (30.4%)	
Metastasis	Yes	130	58 (80.6%)	72 (52.1%)	0.0001*
	No	80	14 (19.4%)	66 (47.8%)	

Table 2: Clinical and Treatment Characteristics

Variable	Total (n)	Bleeding & Recurrence of VTE		P Value
		Yes	No	
ECOG				
0	59	21 (29.2%)	38 (27.5%)	0.9682
1	127	43 (59.7%)	84 (60.9%)	
2	24	8 (11.1%)	16 (11.6%)	
Platelet Counts				
<150K	26	8 (11.1%)	18 (13%)	0.7245
150–450K	186	64 (88.9%)	122 (89.1%)	
Hemoglobin Level				
<10 g/dl	35	11 (15.3%)	24 (17.5%)	0.9267
10–12 g/dl	66	20 (31.4%)	46 (33.6%)	
>12 g/dl	109	38 (58.8%)	71 (51.5%)	
Albumin				
<3.5 g/dl	24	6 (8.4%)	18 (5.5%)	0.0533
3.5–5.2 g/dl	186	68 (94.4%)	118 (94.5%)	
Creatinine				
<1.2 mg/dl	173	53 (73.6%)	120 (86.9%)	0.016*
>1.2 mg/dl	37	19 (26.4%)	18 (13.04%)	
Venous Thromboembolism (VTE)				
PE	56	18 (25%)	38 (27.5%)	0.3956
DVT	89	35 (48.6%)	54 (39.1%)	
Other	95	29 (40.2%)	66 (33.4%)	
Chemotherapy				
Moderate risk	33	12 (16.7%)	21 (15.2%)	0.4195
High risk	42	15 (20.8%)	27 (19.6%)	
Low risk	135	50 (69%)	85 (62.5%)	
Surgery				
Yes	117	51 (70.8%)	66 (47.2%)	0.0014*
No	93	21 (29.2%)	72 (52.8%)	
Post-Surgical VTE Prophylaxis				
No Prophylaxis	47	17 (23.6%)	30 (21.7%)	0.0213
Mechanical Prophylaxis	60	29 (40.3%)	31 (22.5%)	
Chemical Prophylaxis	18	6 (8.3%)	12 (8.7%)	
No Surgical Intervention N/A	85	20 (27.8%)	65 (47.1%)	
Pharmacist Intervention				
Yes	60	31 (43%)	29 (21%)	0.0008*
No	150	41 (57%)	109 (79%)	

Table-3: Clinical and Treatment Characteristics

		Pont Estimate	95% Confidence interval	P Value
Age	18-45	Reference	-	-
	46-55	1.147	0.404 -3.257	0.7972
	56-65	0.707	0.273 - 1.83	0.4743
	66 and above	0.317	0.102 - 0.988	0.0476*
Gender	Female	Reference	-	-
	Male	1.388	0.549 - 3.509	0.4885
Anticoagulants	Oral	Reference	-	-
	Subcutaneous	1.947	0.867 - 4.372	0.1062
Cancer Type	Breast& Gynecology	Reference	-	-
	Gastrointestinal	0.685	0.217 - 2.164	0.5196
	Genitourinary	0.483	0.132 - 1.77	0.2721
	Others	0.423	0.119 - 1.5	0.1829
Diabetes	Yes	Reference	-	-
	No	1.434	0.47 - 4.376	0.5266
Cardiovascular Disease	Yes	Reference	-	-
	No	3.014	1.028 - 8.838	0.0444*
Other Comorbid	Yes	Reference	-	-
	No	0.498	0.099 - 2.498	0.3969
ECOG	0	Reference	-	-
	1	0.82	0.362 -1.861	0.6357
	2	1.407	0.34 - 5.816	0.6373
Metastasis	Yes	Reference	-	-
	No	0.246	0.109 - 0.552	0.0007*
Albumin	< 3.4 g/dl	Reference	-	-
	3.5 – 5.2 g/dl	3.029	0.72 - 12.747	0.1308
Creatinine	< 1.2 mg/dl	Reference	-	-
	> 1.2 mg/dl	0.704	0.277 - 1.793	0.4625
Chemotherapy Vs VTE Risk	Low risk	Reference	-	-
	Moderate risk	1.029	0.377 - 2.811	0.9551
	High risk	0.506	0.204 - 1.259	0.1432
Surgery	No	Reference	-	-
	Yes	0.361	0.165 - 0.788	0.0105*
Pharmacist Intervention	No	Reference	-	-
	Yes	0.147	0.191- 0.911	0.0282*

CONCLUSION

- Overall, these findings underscore the importance of a personalized approach to anticoagulation therapy.
- The critical role of pharmacists in managing anticoagulation therapy cannot be overstated, as their involvement leads to improved therapeutic outcomes and enhanced patient safety.
- Future research should focus on addressing the limitations of this study, such as its retrospective design, and exploring the mechanistic underpinnings of these associations in larger, diverse cohorts

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