KAP STUDY

Knowledge, attitude and practices of surgeons regarding venous thromboembolism prophylaxis in tertiary healthcare hospitals of the Rawalpindi Districts

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Abstract

Objective: To assess doctors' knowledge, attitudes and practices regarding venous thromboembolism prophylaxis.

Method: The cross-sectional study was conducted from April to September 2021 in three public-sector hospitals affiliated with the Rawalpindi Medical University: Holy Family Hospital, Benazir Bhutto Hospital and Rawalpindi District Headquarters Hospital, Rawalpindi, Pakistan, and comprised physicians of either gender who were actively involved in patient care. Data was collected using a predesigned questionnaire regarding venous thromboembolism. Data was analysed using SPSS 25.

Results: All the 220(100%) subjects approached responded positively to the study questionnaire. There were 144(65.45%) general surgeons, 50(22.72%) gynaecologists and 26(11.81%) orthopaedic surgeons. Overall, there were 26(11.81%) senior consultants, 65(29.54%) postgraduate residents and 129(58.63%) house officers. There were 150(68.2%) doctors who reported having witnessed deep-vein thrombosis in their patients, and 113(51.4%) had witnessed deaths related to pulmonary embolism. Among the methods employed for DVT diagnosis, the use of clinical criteria was the most common 136(36.1%), while venography was the least common technique used by 8(2.2%). While 210(95.5%) subjects expressed the desire for adopting an institute-wide regimen for venous thromboembolism prophylaxis, only 66(30%) were currently following such a regimen.

Keywords: Venous thromboembolism, Practice patterns, Physicians, Health Knowledge, Attitudes, Practice, Education, Medical, Quality improvement, Evidence-based medicine, Patient outcome assessment, Healthcare delivery.

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Introduction

Venous thromboembolism (VTE) comprises deep-vein thrombosis (DVT) and pulmonary embolism (PE).[1] Specifically, DVT is the formation of blood clots in the deep veins of the body, such as in the legs. The clots can dislodge, leading to potentially lethal PE, which is a leading cause of hospital-acquired deaths in the world.[2] Blood in the vascular system does not coagulate in healthy individuals because of underlying anti-thrombotic processes. A range of conditions, however, increases the propensity for coagulation. Such conditions include, for instance, obesity, oral contraceptive use, old age, family history of hyperlipidaemic syndromes, thrombophilia, sedentary lifestyles, extended bed rest, and even bone fractures, multiple trauma and cancers.[3]

Systemic prophylaxis has been reported to be an effective solution to managing VTE and reducing the associated risk of PE-induced sudden death.[4] In a study, DVT risk was roughly cut in half by employing mechanical prophylactic methods, as well as lowering the risk of PE by two-fifths, despite the benefits. However, VTE prophylaxis is underused worldwide with only an estimated 58.5% of at-risk surgical patients receiving it.[5]

DVT occurs in Asian populations at rates ranging from 1.3% to 6.1%.[6-8] While estimates of the incidence rates of DVT and PE in Pakistan are not available due to a dearth of research in this area,[9,10] the frequency of postoperative DVT in Indian patients may be used as a surrogate. Likewise, information is lacking on the use of VTE prophylaxis in Pakistani hospitals, and it is likely that a number of patients who could benefit from such therapy are left untreated.

The current study was planned to assess doctors' knowledge, attitudes and practices (KAP) regarding VTE prophylaxis.

Subjects and Methods

The cross-sectional study was conducted from April to September 2021 in three public-sector hospitals affiliated with the Rawalpindi Medical University: Holy Family Hospital, Benazir Bhutto Hospital and Rawalpindi District Headquarters Hospital, Rawalpindi, Pakistan, and comprised physicians of either gender who were actively involved in patient care. Those not actively involved in patient care were excluded. Informed consent was

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obtained from all the subjects, and those not willing to participate were excluded along with those who were unable to complete the survey within the specified time range. Data was collected using a questionnaire about VTE prophylaxis practices in the light of literature.[11] The questionnaire gauged respondents' knowledge of VTE prophylaxis, their understanding of postoperative DVT diagnosis, their perceptions of the susceptibility of Pakistanis to VTE, reasons for not administering VTE prophylaxis, beliefs in the need of institution-based protocols, management practices of postoperative PE, associated mortality, routine VTE prophylaxis for at-risk patients, preoperative VTE risk scoring, the existence of institution-based protocols, and categories/methods employed for prophylaxis.

The sample size was calculated using OpenEpi calculator[12] with 95% confidence level, 4% absolute precision and an anticipated population proportion of VTE prevalence 10%.[13]

The formula used for the purpose was:

$$n = [(Z^2 * p * (1-p)) / E^2]$$

where n was the required sample size, Z was the Z-value for the desired confidence level (Z=1.96), p was the anticipated population proportion, and E was the target absolute precision.

Rounding up to the nearest whole number, a sample size of 217 was considered appropriate enough.

Accordingly, 220 questionnaires were distributed among physicians meeting the inclusion criterion, using judgment sampling.

Data was analysed using SPSS 25, and descriptive statistics were worked out.

Results

All the 220(100%) subjects approached responded positively to the study questionnaire. There were 144(65.45%) general surgeons, 50(22.72%) gynaecologists and 26(11.81%) orthopaedic surgeons. Overall, there were 26(11.81%) senior consultants, 65(29.54%) postgraduate residents and 129(58.63%) house officers.

There were 150(68.2%) doctors who reported having witnessed DVT in their patients, and 113(51.4%) had witnessed deaths related to PE. Among the methods employed for DVT diagnosis, the use of clinical criteria was the most common 136(36.1%), while venography was the least common technique used by 8(2.2%). While 210(95.5%) subjects expressed the desire for adopting an institution-wide regimen for VTE prophylaxis, only 66(30%) were currently following such a regimen (Table 1).

Table-1: Experience of DVT-related complications reported by study participants.

		n (%)
Experiences related to DVT and adverse events	Encountered Deep Vein Thrombosis	150 (68.2)
	Encountered Pulmonary Embolism	140 (63.6)
	Encountered mortality by either of the two	113 (51.4)
Diagnostic attitude	Giving prophylaxis	167 (75.9)
	Scoring patients based on their risk of DVT development	89 (40.5)
	Practicing institute-based regimen For VTE prophylaxis	66 (30)
	Want to adopt an institute-based regimen for VTE prophylaxis	210 (95.5)
Diagnostic strategies	Clinical Diagnosis	134 (36.1)
	Scoring Based	22 (5.9)
	D-Dimer	105 (28.3)
	Venous Doppler	102 (27.5)
	Venography	8 (2.2)

DVT: Deep-vein thrombosis, VTE: Venous thromboembolism.

Table-2: Interventions used to manage deep-vein thrombosis (DVT).

Intervention	n (%) Low Risk	Moderate Risk	High Risk
No Prophylaxis	77 (36.2)	31 (14.1)	2 (0.9)
Early Ambulation	104 (74.3)	101 (54.6)	113 (53.8)
Compression Stockings	71 (50.7)	130 (70.3)	139 (66.2)
Intermittent Compression Devices	6 (4.3)	25 (13.6)	28 (13.3)
Low Molecular Weight Heparin	20 (14.3)	93 (50.3)	152 (72.4)
Unfractionated Heparin	2 (1.4)	24 (13)	57 (27.1)
Warfarin	4 (2.9)	28 (15.1)	92 (41.8)
Rivaroxaban	0 (0)	17 (9.2)	49 (23.3)

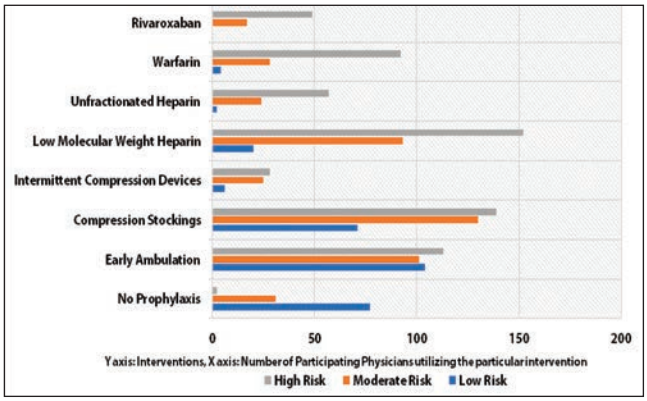

Figure: Interventions used to manage deep-vein thrombosis (DVT) for risk stratification.

Low-molecular-weight heparin was the most common intervention in high-risk cases, compression stockings in those with moderate risk, and early ambulation in patients with low risk (Table 2, Figure).

Discussion

The incidence of DVT and PE in the United States is estimated to be 1 or 2 per 1,000 people per year, with 10-30% of diagnosed cases dying within a month.[14]

The incidence of DVT after major operations in patients aged >40 approaches 30% if no prophylactic measures are used.[15] The argument that Asians have a lower incidence of VTE than their Western counterparts has often been questioned. Most recently, a study found a VTE incidence of 2.3% in Asians undergoing major orthopaedic surgeries without prophylaxis.[16] According to a study in Singapore, the annual VTE incidence in hospital admissions was 1.58%.[17]

A significant portion of doctors interviewed (75.9%) in the current study believed in giving prophylaxis to their patients. While almost all (95.5%) wanted to adopt an institution-wide regimen for VTE prophylaxis, only 30% were actually practicing it. Of the total, 40.5% of the current participants reported scoring patients based on the risk of developing DVT. The majority of doctors recommended early ambulation for low-risk patients, compression stockings for moderate-risk patients, and low-weight heparin for high-risk patients. There were 36.2% doctors who suggested no prophylaxis for low-risk patients, 14.1% suggested no prophylactic measures for moderate-risk patients, and 0.9% wanted no DVT prophylaxis even for their high-risk patients.

In 2010, the Asia-Pacific Thrombosis Advisory Board issued a consensus paper recognising that VTE is a significant problem in Asian patients, and recommending that all Asian countries follow their own national prophylaxis guidelines or, in the absence of one, the American College of Chest Physicians (ACCP) guidelines.[17] The ACCP recommends that each institute develop its own VTE prophylaxis protocol.[18] Several Asian countries, such as Japan and South Korea, have established their own national policies.[19,20]

Despite the establishment of guidelines and protocols, studies have shown that a substantial number of surgical patients around the world do not receive sufficient prophylaxis. A multi-national, multi-centre research, which included 30,827 patients from 32 countries, reported that 41.5% of surgical patients at risk for VTE did not receive enough prophylaxis.[21]

The current study found broad disparities among surgeons regarding the prophylaxis used for each risk group in Pakistan, though almost all showed the willingness to follow an institution-based VTE prophylaxis protocol.

Majority of the doctors in the current study relied on clinical symptoms (36.1%) to diagnose VTE postoperatively, while 28.3% said they used D-dimer assays, and 27.5% used venous Doppler sonography. Scoring-based systems (5.9%) and venography (2.2%) were the least favoured.

According to the ACCP, the diagnostic test should be based on the pre-test likelihood of VTE. D-dimer is recommended as the diagnostic test of choice in patients with a low-to-moderate VTE risk. Whole-leg ultrasound is favoured in patients with a high risk of VTE.[22]

In the light of the current findings, institution-wide protocols and scoring systems are needed for the prevention of VTE-related deaths. The country's regulatory authorities should determine the risk of VTE in Pakistani population, and national guidelines for prophylaxis should be outlined to minimise the discrepancy in VTE prophylaxis strategies, and the number of deaths caused by DVT and PE.

The current study had limitations as it was conducted in a single city. Future research should extend the current study to multiple cities and hospitals, encompassing a diverse range of healthcare professionals. The small sample size was another limitation of the current study. Future studies should aim for larger and more diverse samples to improve the generalisability of the results.

Conclusion

Medical professionals included in the study, often lacked knowledge of prophylactic steps for appropriately treating VTE and preventing associated PE. Moreover, the public-sector hospitals in the study lacked institution-wide VTE prophylaxis protocols.

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Author Contribution:

AK: Study design, concept, questionnaire design, data collection, analysis, interpretation, drafting, literature search and finalizing.
SF: Study design, concept, data collection, analysis, literature search, drafting, corrections and finalizing.
AAN: Study design, concept, data collection, analysis, literature search, drafting and questionnaire design.