Venous Thromboembolism Prophylaxis In Hospitalised Patients

Dear Editor,

Venous thromboembolism (VTE; deep venous thrombosis & pulmonary embolism) is common in hospitalised patients. It is estimated that half of all the hospitalised patients are at increased risk for VTE. In fact, pulmonary embolism remains one of the most common preventable cause of hospital deaths. Effective prophylactic strategies reduce both symptomatic & asymptomatic VTE related events. This topic reviews the preventive strategies for VTE in patients hospitalised for different conditions.

Prophylactic methods for hospitalised medical patients

Patients hospitalised for different medical conditions are at risk for VTE; the incidence of VTE in these patients has been estimated to be 10-80% in absence of any prophylaxis. While as most clinicians administer thromboprophylaxis empirically, a number of risk assessment tools have been developed & can be used in routine practice. These include Padua prediction score, IMPROVE risk score & GENEVA risk score. In general, patients at highest risk of VTE include patients who are critically ill, patients with cancer or stroke & patients with different risk factors for VTE (like age more than 75 years, myocardial infarction, heart failure, renal failure, obesity, any hypercoagulable state etc.).

In patients who do not have high risk for VTE, pharmacological prophylaxis is not warranted. Promoting ambulation in these patients may be an acceptable & effective preventive strategy.

In patients who are at high risk for VTE, bleeding risk is assessed.

Patients are divided into two groups: low bleeding risk & high bleeding risk. Examples of patients with high bleeding

risk include those with active bleeding, coagulopathy, ICH or thrombocytopenia. For patients with high risk for VTE & low risk of bleeding, pharmacological methods are used. Among the different agents available, LMWH is preferred. For patients with severe renal insufficiency, UFH is preferred. In patients with heparin induced thrombocytopenia, fondaparinux is preferred.

For patients with high risk of bleeding, mechanical methods in the form of intermittent pneumatic compression devices, graduated compression stockings or venous foot pumps are used. However, transition to pharmacological agent should be done as soon as bleeding risk becomes low.

VTE prevention in hospitalised surgical patients

As with hospitalised medical patients, risk of VTE is high in postoperative patients with over half of this population at moderate risk for VTE. The risk of VTE in surgical patients depends upon both procedure related & patient related characteristics. For patients undergoing general & abdominal-pelvic surgeries, modified caprini risk assessment tool is used. It classifies patients into very low risk, low risk, moderate risk & high risk groups. As with medical patients, next step is assessment of bleeding risk which depends on individual risk factors & type of surgery. In general, cardiac & neurosurgical procedures are associated with highest bleeding risk (more than 5% major bleeding risk).

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For patients with very low risk of VTE as per caprini risk assessment tool, early ambulation may be sufficient as it may reduce VTE related events by as much as 70%. For patients with low risk, mechanical methods are recommended. These should be started before the surgery & continued till patient becomes ambulatory.

For patients with moderate to high risk of VTE with low bleeding risk, pharmacological methods are warranted. As with medical patients, LMWH is preferred agent except for patients with renal failure & heparin induced thrombocytopenia.

The optimal timing for starting prophylaxis is not known & should be individualised. Most experts recommend starting these agents 2 to 12 hours prior to surgery except for fondaparinux which has to be given 6-8 hours after skin closure. These agents should be continued till patient is ambulatory or until hospital discharge.

For patients with high bleeding risk, mechanical methods in the form of intermittent pneumatic compression devices, graduated compression stockings or venous foot pumps are used.

Orthopaedic patients are at highest risk for VTE among all the surgical specialities. These patients require extended thromboprophylaxis especially in certain high risk procedures like total hip replacement & total knee arthroplasty. Direct oral anticoagulants like rivaroxaban & apixaban can be used in these patients.

CONCLUSION

Hospitalised patients are at considerable risk for VTE & prophylaxis is needed to reduce VTE related deaths. Different strategies are available & depend upon the risk of thrombosis & risk of bleeding; & should be individualised.

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