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Case Report on Excess Use of Anti-Coagulants in Postoperative Patient



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HUMAN

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ABSTRACT

Cellulitis is a common, potentially serious bacterial skin infection. The affected skin appears swollen and red and is typically painful and warm to the touch. Cellulitis usually affects the skin on the lower legs, but it can occur in the face, arms and other areas. This is a case of male patient of age 55 years old who was admitted with a chief complaint of blackish discolouration of left lower limb and not able to walk. He was advised amputation after which he was prescribed with the combination therapy of anticoagulants and antiplatelets which may rise the risk of bleeding complications.



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INTRODUCTION:

Anticoagulants are the cornerstone therapy for thrombosis prevention and treatment. While anticoagulants are commonly employed, their use is often associated with adverse drug events and increased readmission rates.¹

Anticoagulants achieve their effect by suppressing the synthesis or function of various clotting factors that are normally present in the blood. Such drugs are often used to prevent the formation of blood clots (thrombi) in the veins or arteries or the enlargement of a clot that is circulating in the bloodstream.

Anticoagulants generally are of two types: heparin, which is given by injection, and derivatives of coumarin or indandione, which are administered orally.²

CONCOMITANT USE OF ANTIPLATELETS AND ANTICOAGULANTS:

Aspirin

Mechanism of action: Aspirin (acetylsalicylic acid) irreversibly inhibits prostaglandin H synthase (cyclooxygenase-1) in platelets and megakaryocytes, and thereby blocks the formation of thromboxane A₂ (TXA₂; a potent vasoconstrictor and platelet aggregant).

Clopidogrel

Mechanism of action: The thienopyridine derivatives (clopidogrel) are metabolised in the liver to active compounds which covalently bind to the adenosine phosphate (ADP) receptor on platelets and dramatically reduce platelet activation.³

Enoxaparin

Mechanism of action: Enoxaparin is a type of low molecular weight heparin (LMWHs). It has an immediate onset of action when given in the intravenous form. It binds to and potentiates antithrombin III, a serine protease inhibitor, to form a complex that irreversibly inactivates factor Xa.⁴

Acenocoumarol

Mechanism of action: Anticoagulant treatment is required for the treatment and prevention of thromboembolic disorders. Vitamin K antagonists are commonly used oral anticoagulants worldwide. Acenocoumarol is mono-coumarin derivative. They inhibit the reduction of vitamin K by preventing carboxylation of glutamic acid residues of vitamin K-dependent coagulation factors II, VII, IX, and X, a crucial step in the coagulation process.⁵

Dual antiplatelet therapy is known to reduce significantly the number of arterial thrombotic events in the perioperative period. However, mortality linked to these circumstances is hardly increased. The relative risks of a thromboembolic event and bleeding should be weighed.

For operations with low bleeding risk, antiplatelet therapy does not need to be interrupted. In procedures with a high risk of bleeding, aspirin should be maintained and other antiplatelet substances discontinued long enough before surgery to allow the antiplatelet effect to have waned. If possible, for example after percutaneous coronary angioplasty, the operation should be delayed until the patient has a lower risk of cardiovascular complications. In patients with a low risk of thromboembolic events who require surgery that carries a high risk of haemorrhage, antiplatelet therapy should be interrupted in the perioperative period. The continuous evaluation of the bleeding should guide intra- and postoperative therapeutic strategies.

Of all patients receiving oral anticoagulant treatment, 10% have to interrupt it for invasive procedures at some point. In current clinical practice, bridging therapy is widely used to cover the temporary withdrawal of oral anticoagulation. Recent data (e.g. BRIDGE Trial, ORBIT-AF) suggest that this approach increases the risk of perioperative haemorrhage but with little beneficial effect on thromboembolic complications in patients with atrial fibrillation. Most importantly, two major aspects need to be considered, as follows: (i) the risk of intervention related haemorrhage; and (ii) the risk of perioperative thromboembolism, classified as low, medium, or high.⁶

CASE REPORT:

CHIEF COMPLAINT: A male patient of age 55 years old was admitted in surgery ward in King George Hospital, Visakhapatnam with a chief complaint of blackish discolouration of left lower limb, history of loss of sensation, not able to walk, no H/O fever, trauma, HTN, DM. Patient was apparently normal 5 days back when he developed pain in the left leg calf muscle while walking which gradually increased in intensity. The blackish discolouration of the leg at the toes and ascending up to knee joint. The patient was diagnosed as **left leg cellulitis** and was advised for amputation for which consent was taken from the patient.

PERSONAL HISTORY: The patient is taking mixed diet, sleep and appetite as found to be normal. He was a smoker and alcoholic since 30 years and stopped at 10 years and 1 month respectively.

VITALS: BP: 120/80 mm of hg, pulse rate: 92/min, spO₂: 97%, CVS:s1 and s2 are positive, Respiratory system: BAE+, P/A: soft and no tenderness.

LOCAL EXAMINATION: 4th toe amputated, loss of hair+, unhealthy toenails, no ulcers or scars.

LAB INVESTIGATION: Laboratory data include haemoglobin:13.5g/dl, PCV:44%, neutrophils:75%, lymphocytes:25%, eosinophils:6%, monocytes: 6%, total bilirubin:0.8 mg/dl, direct bilirubin:0.2, indirect bilirubin: 0.6, serum creatinine:1.6mg/dl, alkaline phosphatase:107U/L, SGPT:286U/L, SGOT:451U/L, bleeding time: 5'6", clotting time:2'30", INR: 1.45.

CT ANGIOGRAM: Total thrombosis with absent opacification of left common ileac region, Thrombophlebitis.

DRUG CHART:

Pre-operative:

Table 1: Pre-operative treatment regimen.

Sr. No.	Drug name	Dose	ROA
1	Inj. Ceftriaxone	1gm	IV stat
2	Int. TT	½ cc	IM stat
3	Inj. Pantop	40 mg, OD	IV
4	Inj. Diclofenac	75mg, TID	IV
5	Tab. Rantac	15mg, H/S	Oral
6	Tab. Alprox	0.25mg, H/S	Oral

Post-operative:

Table 2: Post-operative treatment regimen.

Sr. No.	Drug name	Dose	ROA	Day1-2	Day 3-5	Day-6
1	Inj. Piperacillin+ Tazobactam	4.5gm in 100ml NS, BID	IV	*	*	*
2	Inj. Amikacin	500mg, OD	IV	*	*	*
3	Inj. Tramadol	2cc in 3cc NS, OD	IV	*	*	*
4	Inj. Ondansetron	2cc, BID	IV	*	*	*
5	Inj. Pantoprazole	40mg, OD	IV	*	*	*
6	Inj. Enoxaparin	40mg, OD	SC	*	*	*
7	Tab. Acenocoumarol	2mg, OD	Oral		*	*
8	Tab. Aspirin	100mg, OD	Oral			*
9	Tab. Clopidogrel	75mg, OD	Oral			*
10	Tab. Vit-c	TID	Oral		*	*
11	Inj. Diclofenac	75mg, BID	IM		*	*
12	Inj. Paracetamol	1gm, TID	IV	*	*	*

CLINICAL PHARMACIST PRESCRIPTION EVALUATION:

There are some serious drug interactions in the case between anticoagulants and Piperacillin/Tazobactam and Enoxaparin obtained from Medscape. Prescribing more number of anticoagulants may lead to bleeding complications which might be dangerous in post-operative patient. Therefore, evaluation of clinical pharmacists is important to identify such problems in prescription.

DISCUSSION:

In this case report, we observed that the patient has left leg cellulitis and has undergone amputation. His post-operative prescription included combination of intravenous and oral anticoagulants and antiplatelets. These may cause serious bleeding problems. This study is similar to the study conducted by **J. W. Eikelboom, J. Hirsh** who concluded that the risk of bleeding would be increased by adding anticoagulants to the combination of clopidogrel and aspirin.⁷

CONCLUSION:

Combination therapy of anticoagulants and antiplatelets will lead to development of more number of adverse drug reactions and may lead to serious bleeding complications. This may be high risk to the patient especially post-surgery. As mentioned above, there is a risk in coronary angioplasty on the use of these drugs. It also increases the economical burden to the patient. Hence it is necessary to monitor this condition by prescribing limited number of anticoagulants by assessing the risk in patient. Therefore, evaluation of clinical pharmacist is important to identify and rectify such problems.

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