Treatment of deep vein thrombosis using Factor Xa inhibitor concurrent with platinum based chemotherapy regimen: a case report

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Introduction
- Cancer-associated thrombosis (CAT) are known to be a leading cause of mortality patients with solid cancer. Patients receiving chemotherapy especially Platinum-based chemotherapy are at higher risk of developing CAT.
- The oral anticoagulant treatment such as Warfarin is associated with increased recurrent CAT, increased bleeding tendency and frequent coagulation profile monitoring is a barrier for chemotherapy schedule adherence.
- The use of low molecular weight heparin, such as enoxaparin is limited by poor compliance and incorrect technique of subcutaneous injection which affects the efficacy of the treatment.
- The use Novel oral anticoagulant (NOACs) as first line treatment are becoming more prominent as a treatment choice for CAT in clinical due to ease of administration and monitoring.
- However, using NOACs to treat deep vein thrombosis (DVT) during chemotherapy is extremely limited, evident from the lack of published information.

Case Presentation
- A 58 years old man presented with constipation, abdominal discomfort, and melena for two weeks. The patient’s colonoscopy observed a mass of 15cm to 25cm with a sessile polyp at 80cm from the anal verge. Subsequently, patient’s biopsy results reported tubular polyp adenoma suggestive of adenocarcinoma.
- Subsequently, the patient underwent surgery for anterior resection of rectosigmoid carcinoma and the final clinical diagnosis was rectosigmoid carcinoma stage T3N1M0.
- The patients were started on 12 cycles of adjuvant Platinum-based FOLFOX regimen (Oxaliplatin, Leucovorin, and continuous Fluorouracil infusion). Patient chemotherapy administration was uneventful until the 4th cycle.
- During 4th cycle, patient complained of numbness, swelling and paleness at the left lower limb. The femoral vein from the upper thigh to the knee was non-compressible. The reduced blood flow from the thigh to the distal thigh of the femoral vein was a suggestive feature of thrombosis. The left popliteal vein was also non-compressible, but no echogenic material was seen within. The result of Doppler ultrasound concluded that the patient was diagnosed with left lower limb DVT. (Fig 1 and Fig 2).

- The patient rejected treatment with subcutaneous Enoxaparin given the prolonged treatment duration and hesitance of compliance to subcutaneous injection. Warfarin was ruled out due to drug-drug interaction with Fluorouracil and high bleeding risk in cancer patient.
- Patient was started on Rivaroxaban 15mg twice a day for 21 days and continued with 20mg once a day for three months based on the DVT treatment recommendation. The patient completed the remaining chemotherapy without any event.
- Post Rivaroxaban treatment completion, the bilateral femoral vein from upper thigh to above knee appeared grossly patent, compressible, and absent of any DVT features (Fig 3 and Fig 4). His edema also had resolved, and his peripheral neuropathy had resolved by completion of the rivaroxaban regimen. The patient did not complain of any other notable side effects.

Discussion
- Chemotherapy treatment schedules are often disrupted with the incidence of DVT. The risk of VTE increases by 4.1 fold among cancer patients, and the administration of chemotherapy further increased the risk by 6.5 fold [1].
- We explored oral administration of anticoagulant agents as our patients expressed rejection for prolonged SC injection. LMWH, such as Enoxaparin and Tinzaparin, is a standard treatment of CAT [2]. However, the duration of SC injection of LMWH for at least 3-6 months has contributed to non-compliance in cancer patient patients.
- The selection of Rivaroxaban was aided by The Select-D study, which observed reduction of recurrent VTE in CAT patients receiving Rivaroxaban compare with dalteparin, an LMWH [3].
- Based on the Doppler ultrasound post-treatment, we can conclude that this patient’s VTE event was successfully treated with Rivaroxaban. The use of NOACs was particularly beneficial in our case as we could accommodate the patients’ SC injection hesitancy and continue planned chemotherapy regimen without any rescheduling. Our case reports add the experience of successfully using Rivaroxaban in clinical practice. However, the rivaroxaban regimen’s cost is higher than standard LMWHs treatment, questioning our approach’s sustainability for future cases.

Conclusion
- We are reporting successful treatment of CAT using NOACs. Our report adds to growing findings reporting the efficacy of NOACs in treating embolic events among cancer patients. However, clinical trials are still needed to evaluate the efficacy and cost effectiveness of NOACs in cancer patients.

Reference
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