Prolonged prothrombin time during the vancomycin therapy in the ICU therapeutic problem resolved using rotational thromboelastometry (ROTEM)

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Introduction

- Prolongation of prothrombin time (PT) without clinical impairment of haemostasis was previously shown for some synthetic derivatives of vancomycin and was reagent or method specific¹

Case 1.

Patient M.M. 75 male

- his peroral anticoagulant therapy was discontinued for 5 days since he was admitted to hospital
- he was for 5 days on iv. Vancomycin & Meronem due to the parapharyngeal abscess with sepsis & bilateral pneumonia
- mechanically ventilated for 3 days
- central venous catheter (CVC) placement was considered and coagulation tests was done
- coagulation tests have shown extremely prolonged PT (0.14, 3.97 INR) with normal platelet count, fibrinogen and aPTT
- K-vitamin was given & with no effects
- PT was measured using Innovin reagent (Siemens)
- ROTEM control was ordered and was normal in INTEM and FIBTEM, with slightly prolonged only clotting time (CT) in EXTEM (fig. 1)
- No clinical signs of coagulation disorder were observed
- CVC was placed uneventfully
- after 8 days vancomycin was stopped. Before patient was discharged his PT was 0.57 (1.35 INR)

Case 2.

Patient T.V., 33 male

- submitted in the ICU after surgical treatment of malignant brain tumour
- preoperative coagulation tests were normal
- he was for 10 days on iv. Vancomycin & Colistin iv. & inhalation
- percutaneous tracheostomy was considered
- coagulation tests have shown prolongation of PT (0.45, 1.5 INR), high fibrinogen (7.5), normal platelet count and aPTT
- K vitamin was given & no effects
- ROTEM was performed which had confirmed hypercoagulability in EXTEM, INTEM and FIBTEM analyses (fig 2.)
- No clinical signs of coagulation disorder were observed
- tracheostomy was uneventfully performed
- after vancomycin therapy was stopped, PT returned to normal

Discussion

- ROTEM may be useful complementary method in patients with coagulation disorders undergoing invasive procedures
- Other risk factors, i.e. renal failure and therapy may contribute to measurement disorders, or may arise in the coagulation disorders
- Other drugs in the patients' current therapy that may interfere with coagulation should be considered
- Further investigations in the standardization of ROTEM values in different patients categories should be undertaken

Fig 1

Fig 2

ROTEM did not confirmed coagulation disorder in two patients with prolonged PT

Learning points

- ROTEM may be useful additional tool for clarifying diagnostic problems related to the coagulation disorders in the ICU patients, and may help to identify falsely elevated values of PT
- PT testing with different reagents & different time points during and after Vancomycin therapy should be considered
- Interference of PT measurement should be further investigated by in vitro testing on pooled normal human plasma