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POSTER ABSTRACTS

401.BLOOD TRANSFUSION

Cellular Components in Whole Blood Contribute to the Development of Thromboembolic Events in Patients with Pancreatic Cancer

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Introduction

Thromboembolic disease is a major complication in patients with pancreatic ductal adenocarcinoma (PDAC), causing morbidity and mortality. One in five patients with newly diagnosed PDAC develops a venous thromboembolism (VTE), which is associated with a decreased overall survival time . Patients with PDAC often have altered blood cell counts, which are further affected by systemic therapy. The high thromboembolic risk in patients with PDAC may be caused by pro-coagulant effects of pancreatic cancer on blood cells. Currently, there are no risk assessment tools or biomarkers available that can identify PDAC patients at highest risk of VTE.

Aims

To investigate the impact of PDAC on blood cell dependent coagulation, to characterize the high thrombosis risk in PDAC patients.
To predict thromboembolic events in patients with PDAC using blood cell dependent assays, performed in whole blood.

Methods

Patients with locally advanced or metastatic PDAC (n=18) were included in a prospective, observational, case-control study (TROCOPAC study). At inclusion, before the initiation of chemotherapy, blood was collected to study whole blood (WB) coagulation profiles. Thrombin generation (TG) was measured in WB and platelet poor plasma (PPP) of 18 patients with PDAC and 18 healthy individuals matched for age and sex. The capacity of platelets to release granules was measured in a time-dependent manner upon stimulation with a PAR1 receptor agonist in WB. Patients were followed for 6 months upon inclusion. The primary endpoint was the onset of thromboembolic events, both VTE and arterial thromboembolism (ATE).

Results

Patients with PDAC have an increased endogenous thrombin potential (ETP) in whole blood. This difference was not observed in PPP, indicating a procoagulant effect caused by blood cells. Furthermore, patients with PDAC have a prolonged lag time in whole blood, while the lag time in PPP was not different between patients and controls. Platelet and white blood cell counts (WBC) significantly correlated with the WB ETP and peak in patients with PDAC, which was not observed in healthy controls. Of the 18 PDAC patients, 4 developed a VTE (22%) and 1 an ATE (6%). A shorter lag time of WB-TG and an increased maximum capacity of platelets to release granules, at study inclusion, were associated with incident thromboembolic events.

Conclusions

Patients with PDAC have an imbalanced WB-TG profile. The lag time in WB-TG and the granule release capacity of platelets predict an increased incidence of thromboembolic events. Red blood cell and white blood cell abnormalities in PDAC are associated with this disturbance in thrombin generation. Platelets and white blood cells hence appear to be a driving force in the development of thrombosis in patients with PDAC. As such, measuring hemostasis in whole blood would improve the thrombosis risk estimation in PDAC patients.

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Disclosures Willems: *Stago:* Other: Synapse Research Institute is part of the Diagnostica Stago group. **Roest:** *Synapse Research Institute:* Current Employment, Other: Synapse Research Institute is part of the Diagnostica Stago group. **de Laat:** *Diagnostica Stago:* Other: Synapse Research Institute is part of the Diagnostica Stago group.

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