Effect of pneumatic tube transport on rotational thromboelastometry

Editor—With great interest, we read the article on pneumatic tube transport (PTS) of blood samples and the influence on rotational thromboelastography results.1 Martin and colleagues conclude that their study population [intensive care unit (ICU) patients] had a normal haemostasis. The authors do not mention the reason for admission or patient’s co-morbidities. Patients on the ICUs frequently suffer from infections or even sepsis, which both might activate the coagulation system.2 In this study group, this is expressed in the FIBTEM group, which are above the generally accepted reference range for fibrinogen (200–400 mg litre−1). These values indicate a hypercoagulable state in the authors’ population. As a result of high fibrinogen levels, it could be expected that corresponding FIBTEM results are much higher than the results reported by Colucci and our group: A10 of 18 and 13 mm for both groups, respectively.3 6 The authors do not refer to these studies in which the influence of PTS on rotational thromboelastometry (ROTEM) analysis was already investigated. Colucci and colleagues3 reported on 30 healthy volunteers and we investigated 44 patients undergoing cardiac surgery.5 On the ROTEM analyser, four different reagent types can be performed simultaneously per patient. In contrast to Martin and colleagues, both studies conducted a set of four ROTEM assay per patient, which could have been reported as n=120 and n=176, respectively. Why did the authors perform only one reagent type per patient, which suggests a large study population (n=92)? Although the authors point out that only six out of 27 parameters (INTEM A10, CT, MCF, and EXTEM A10, CT, MCF) reach statistical significance, they generally conclude that thromboelastometry parameters after PTS are significantly altered. Most of the significant differences are only just above the coefficient of variation (CV) of the assay. This is an extra argument for the small clinical relevance of these findings. In the discussion, the authors argue that the difference in the CT-INTEM assay might be caused by pre-activation of the coagulation system due to PTS transport. However, we could not show pre-activation as a result of PTS, using the thrombin generation assay, which is very sensitive to detecting pre-activation.6 Finally, the authors conclude that it is generally feasible to transport blood samples for ROTEM analysis by any PTC. This conclusion might not be true, because potential activation of coagulation might be induced by higher degrees of acceleration/deceleration, PTS length, and by temperature differences during the transport induced by external heat sources. Although the findings of Martin and colleagues generally support our results in terms of clinical relevant differences due to transport, we advise hospitals to validate and investigate their PTS system for all blood sample transport for coagulation tests.

M. D. Lancé*
Y. M. C. Henskens
Maastricht, The Netherlands
E-mail: marcus.lance@mumc.nl


Reply from the authors

Editor—We thank Dr Lancé and Dr Henskens for their comments on our study. We are pleased that our findings generally support the findings of Lance and colleagues in terms of clinical relevant differences on rotational thromboelastography after pneumatic tube system (PTS) transport of blood samples.1 Dr Lance and Dr Henskens remarked that the elevated fibrinogen levels seen in our study group may indicate a hypercoagulable state and asked us to specify co-morbidities of the study group. The study cohort consisted predominantly of patients after extended reconstructive maxillo-facial surgery with corresponding chronic diseases which may explain...