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LETTER TO THE EDITOR

Concerning Fiedler S. A. et al.: Evaluation of the *in vitro* Function of Platelet Concentrates from Pooled Buffy Coats or Apheresis. Transfus Med Hemother 2020

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We would like to comment on Fiedler et al: Evaluation of the *in vitro* Function of Platelet Concentrates from Pooled Buffy Coats or Apheresis. Transfus Med Hemother 2020 [1] which we have read with great interest. In this publication the authors dealt with the comparison of platelet concentrates (PCs) obtained from pooled buffy coats (PPC) or apheresis (APC). To this day, the treatment of thrombocytopenia is based on the administration of thrombocyte concentrates [2]. While the discussion about a contamination of PCs with infectious agents has led to intensive research in this area [3], the discussion about the production of the preparations, especially whether apheresis or pool PCs are to be preferred, is increasingly coming to the focus.

In this paper it was concluded that platelets of PPCs and APCs are identical with respect to their *in vitro* function and stability parameters. The methods used appear to be adequate and interesting for the research question. They include transmission electron microscopy, flow cytometry, light transmission aggregometry (LTA), flow chamber experiments, and enzyme-linked immunosorbent assay.

In our opinion, the ROTEM® delta analysis is not suitable for a platelet function test [4,5]. Furthermore, we see difficulties with regard to statements about the morphology of the platelets. We doubt the statement regarding the higher proportion of discoidal platelets in APCs

(see Table 2, Figure 2 [1]), not least because we believe that a reliable assessment of the morphology requires uniform sample preparation. It should be considered that the authors also see limitations in this respect. Overall, it should be noted that statistical trends per se do not become significant due to the small sample size of PCs. This becomes particularly clear when one takes a closer look at the effects caused by shear stress. In principle an activation of the platelets is to be expected by shear stress [6]. This effect is illustrated in Table 3 [1] by the increased P-selectin expression before and after the challenge of APCs. The proportion of sP-selectin is also significantly increased after exposure to shear stress (Table 3 [1]: sP-selectin pre: 0.1 ng/mL, post: 23.1 ng/mL). This effect can also be seen with LTA. Due to the activation by shear stress a lower aggregation of the platelets can be expected after the challenge. This can be observed with both the agonist collagen and ADP. In the preparation of the PPCs these differences are not visible in the experiments performed (especially see Table 3 [1] PLT P-selectin expression and LTA using ADP). Unfortunately this interesting aspect is not revealed by the small sample size.

The authors point out the individuality of the single concentrates and the resulting high variance of the products because of the low number of samples tested. This makes it difficult to compare the two products in principle with regard to the number of samples used.

In terms of the sample material used (PPCs and APCs produced in 100% plasma), the study was designed to investigate the influence of the production process on the quality of the PCs. To draw a conclusion about the basic functionality of PPCs and APCs was not the primary objective of this study and should therefore not be interpreted as such. If this publication is used to assume a regular equality of the function of PCs, it should be pointed out that the authors also see a strong limitation here. Moreover, it should be mentioned that the majority of PPCs produced in Germany is not produced in 100% plasma but in a substitute solution which makes a transfer of the *in vitro* findings to the routine clinical application almost impossible particularly not for the selection of a PC of a specific type (PPC vs. APC) in clinical practice.

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