

BACKGROUND

- Platelet Count (PC) and rotational thromboelastometry (ROTEM) are used to monitor coagulation status in neonates on ECMO.
- Platelet mass (PM), the total circulating volume of platelets, may be more important for platelet function and hemostasis than PC.
- Platelet function may be assessed using ROTEM, however, its relationship to PM has not been studied in neonates on ECMO.

PURPOSE

- To determine the correlation between PM and platelet-specific maximal clot firmness (PMCF) using ROTEM.
- To test the hypothesis that PM is a better surrogate for platelet function than PC.

METHODS

- Retrospective review of medical records of neonates (n=13) with congenital heart disease placed on ECMO in the cardiovascular intensive care unit from 2015 to 2018
- Data extracted included: PC, mean platelet volume (MPV) and ROTEM data
- Definitions:
 - PM** = PC ($10^3/\mu$) X MPV (μ fL)
 - PMCF** = EXTEM MCF-FIBTEM MCF
- Data analyzed using mixed effects linear models

RESULTS

Fig 1: Platelet-Specific MCF vs Platelet Mass

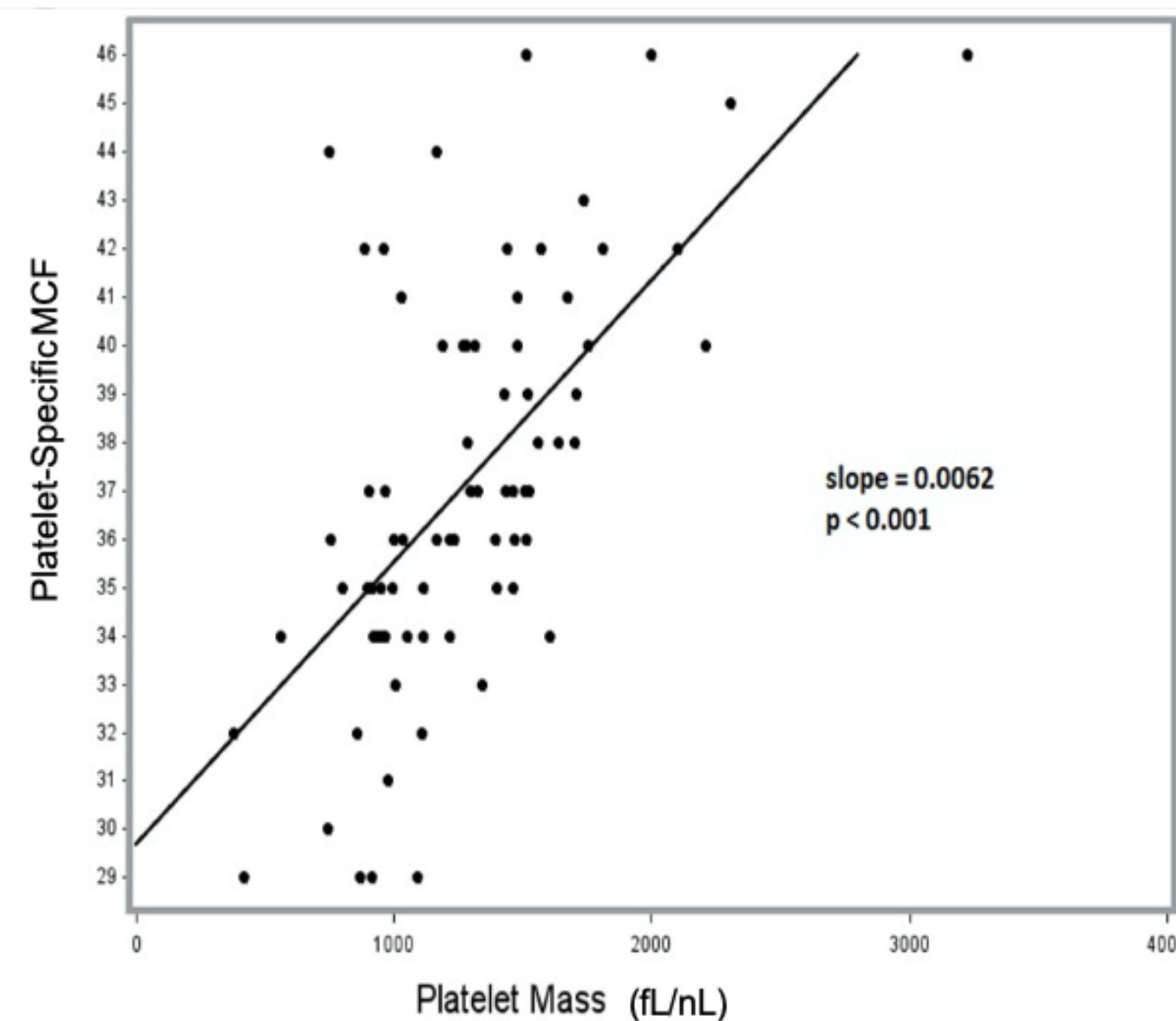


Fig 2: Platelet-Specific MCF vs Platelet Count

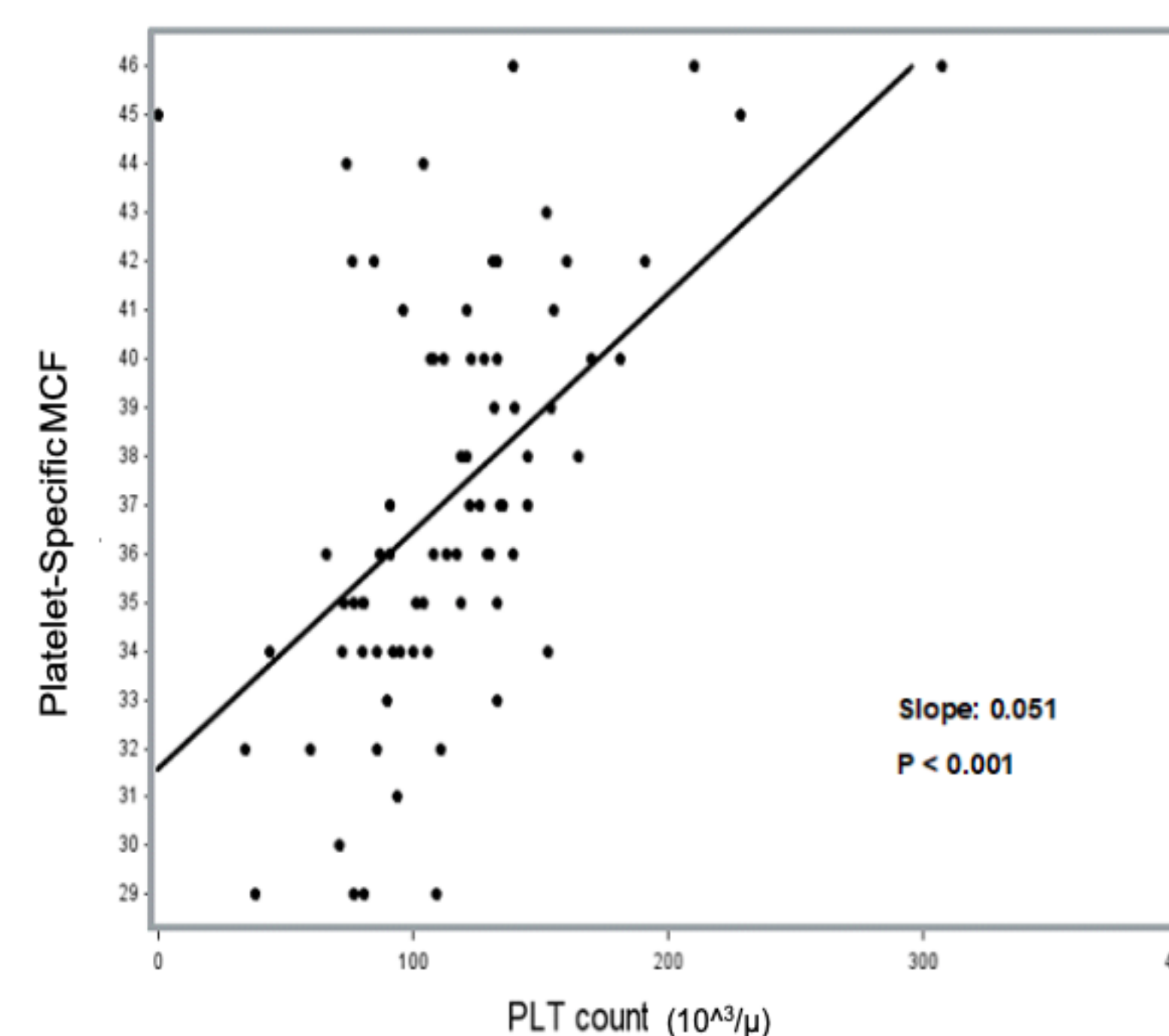


Fig 3: Platelet-Specific MCF vs MPV

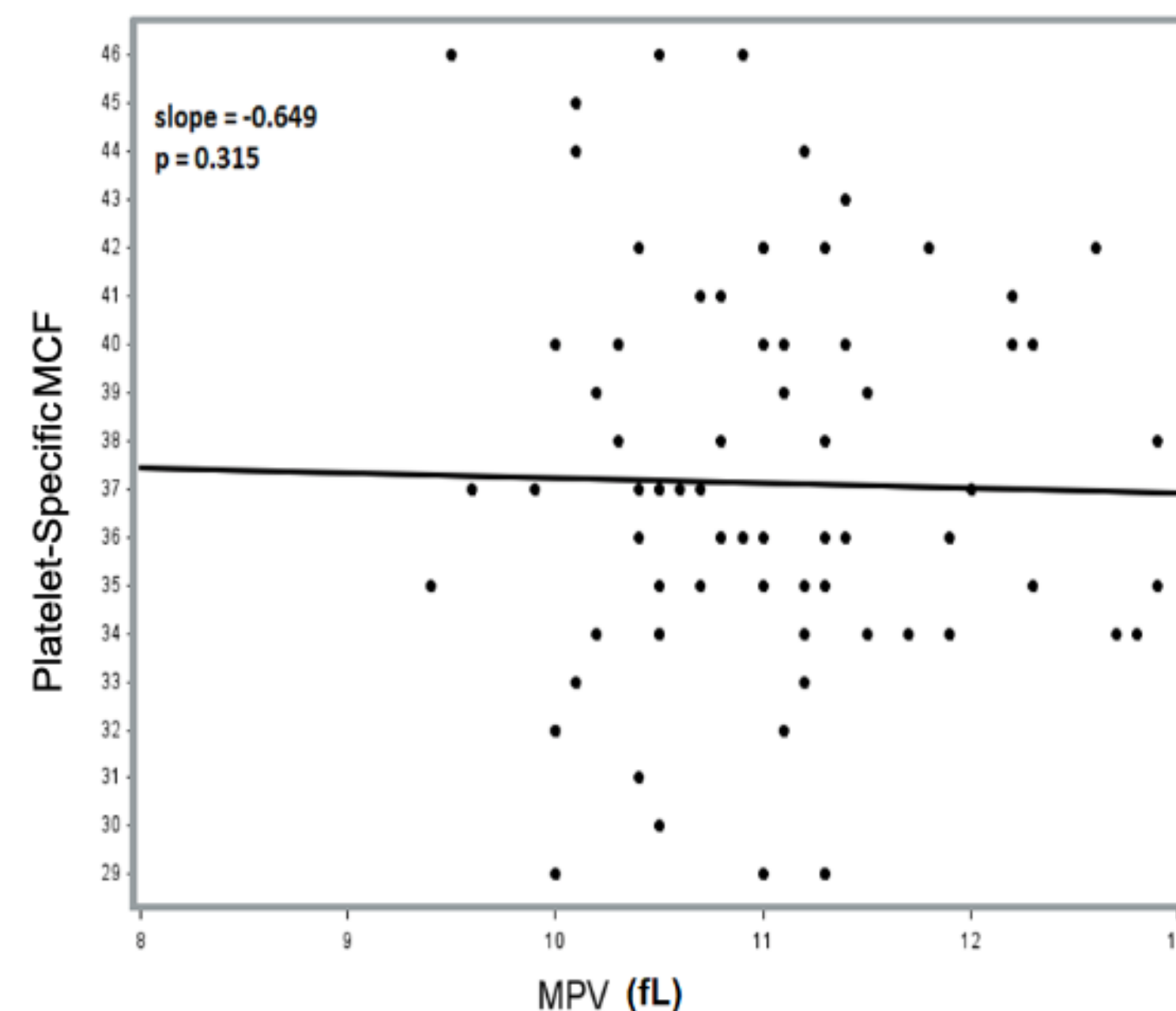
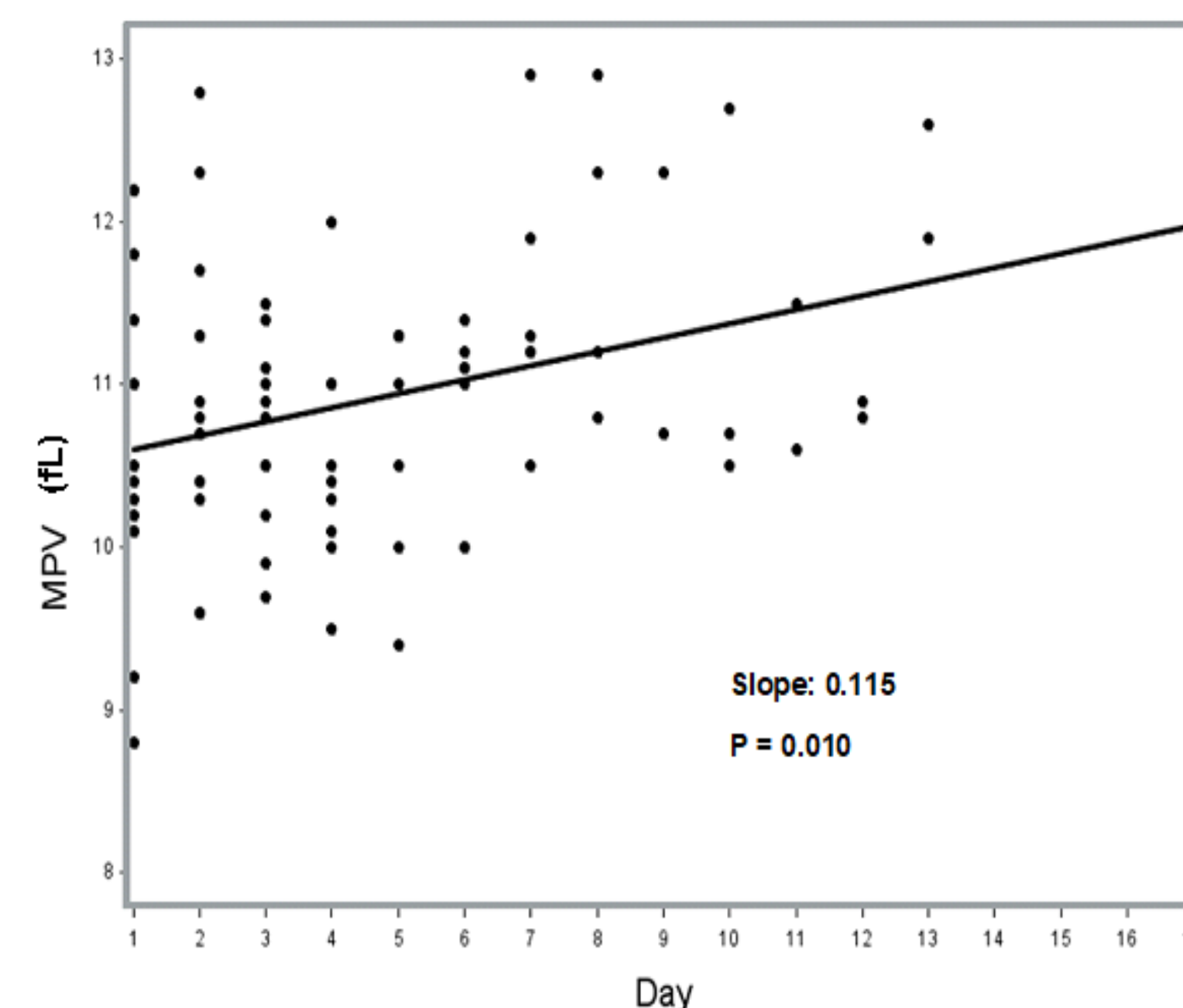


Fig 4: MPV vs Days on ECMO



METHODS

Table 1. Clinical and Demographic Data

Gestational Age, Weeks*	37.9 (35.4-40.0, \pm 1.78)
Birth Weight, Kg	3.00 (1.70-3.72, \pm 0.52)
Sex	9 Female 4 Male
Age to ECMO, days	13 (1.0-25, \pm 7.25)
Length of ECMO, days	5.5 (2.0-11, \pm 2.90)

*Mean (Range, SD)

RESULTS

- A total of 94 tests on consecutive days were obtained for 13 ECMO patients.
- PM explains a significant proportion of the change in platelet-specific MCF (38.6%, p < 0.001) (**Figure 1**)
- PC explains 26.1% of the variation in change in MCF (P < 0.001) (**Figure 2**)
- MPV accounted for < 1% of the variation in change in MCF (p=0.315) (**Figure 3**).
- In addition, each additional day on ECMO was associated with a predicted 0.115 fL increase in MPV (p=0.010) (**Figure 4**).

CONCLUSION

Platelet Mass is a better indicator of platelet function than Platelet Count alone and can be calculated from routine laboratory testing without the need for additional blood draws or cost.