

Hematological and Coagulation Implications of Vasopressor Use: Epinephrine versus Norepinephrine

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Dear Editor,

I read with great interest the article entitled “The Effects of Epinephrine, Norepinephrine and Dopamine on Hemogram and Coagulation Parameters” published in Van Medical Journal (32 (3):158 -163, 2025) by Tunçdemir et al.. The study investigated the effects of vasopressor agents on hemogram and coagulation parameters in an experimental rat model (1). Since vasopressors are widely used in critical care, understanding their hematological and hemostatic consequences is of great clinical importance. However, I would like to emphasize two points that deserve further consideration. First, the study demonstrated that epinephrine infusion significantly increased hemoglobin and hematocrit values, whereas norepinephrine, despite being a potent vasoconstrictor, did not induce similar changes. This discrepancy may be related to differences in adrenergic receptor activation. Epinephrine, with its combined α - and β -adrenergic effects, may induce splenic contraction and plasma volume shifts that transiently elevate Hb and Hct, while norepinephrine, being predominantly α -adrenergic, lacks this effect (2). Clinically, this implies that hemoglobin and hematocrit levels might be artifactually increased during epinephrine infusion, potentially masking anemia, whereas norepinephrine appears not to induce such changes. Therefore, the choice of vasopressor should be considered when interpreting hematological parameters in critically ill patients. Second, the authors concluded that vasopressors did not alter coagulation parameters, based on unchanged PT, APTT, and INR values. However, this interpretation is limited, since routine coagulation assays only reflect the extrinsic and intrinsic pathways globally and may overlook subtle but clinically important alterations in individual clotting factors (3). Indeed,

norepinephrine infusion itself has been associated with a prothrombotic response mediated partly by α -adrenergic mechanisms (4). This highlights that routine assays may fail to capture hidden procoagulant changes, and therefore the absence of alterations in PT, APTT, and INR should not be interpreted as definitive evidence that vasopressors exert no effect on coagulation. In conclusion, this valuable study highlights important aspects of vasopressor use, but future research should investigate the divergent hematological effects of norepinephrine compared to epinephrine, and should also include direct measurements of coagulation factors to better clarify their impact on hemostasis.

References

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