

CORRESPONDENCE

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Heparin Resistance Prior to Cardiovascular Bypass

To the Editor:—Regarding the report of Dr. Anderson,¹ the author indicates in table 1 that the listed activated coagulation time (ACT) values were “Not measured, but derived from the equation determined by Dauchot *et al.*: $ACT = (APTT + 15.99)/0.39$.”

Not to diminish the relevance of Dr. Anderson's findings, especially the excellent discussion of factors affecting heparin sensitivity, it should be noted that the equation of Dauchot *et al.*² was derived from ACT and activated partial thromboplastin time (APTT) data with a correlation coefficient of $r = 0.49$. Although APTT values show a relationship to ACT values, their correlation is clearly mediocre.

Conversion of APTT to ACT should be avoided, in the literature as well as in the clinical setting, especially since instruments measuring ACT directly from whole blood are routinely available. Dauchot *et al.* used the

Hemochron® (International Technidyne Corp., Edison, NJ) in their comparison of ACT and APTT.

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2. Dauchot PJ, Berzina-Moettus L, Rabinovitch A, Ankeney JL: Activated partial thromboplastin times in assessment and reversal of heparin-induced anticoagulation for cardiopulmonary bypass. *Anesth Analg* 62:710–719, 1983

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In Reply:—In response to the letter by Doctors Breitmeyer and Rutledge, I wholeheartedly agree that conversion of the activated partial thromboplastin time (APTT) to the activated coagulation time (ACT) in the clinical setting should be avoided. Since a baseline ACT had not been obtained, its derivation in table 1¹ was not intended to suggest or support the use of a conversion formula. In addition, it was not intended to assign one specific value to the result based on a formula with low linear correlation, but rather to indicate the normal range of the unmeasured, as well as the measured, preheparin coagulation studies in the patient. Indeed, despite the fact that Dauchot's equation had a low correlation coefficient (0.49),² the mean baseline ACT (131 ± 14 s) and APTT (27 ± 2 s) were both in the normal range. There is no doubt that the ACT is a superior method of anticoagulation measurement compared to the APTT (more convenient, faster results, better predictor of heparin levels during cardiopulmonary bypass), and should be directly measured. It is interesting to note that a much better correlation is seen when one compares the logarithm of the change of the APTT to the change of the ACT (which has a correlation coefficient of 0.944).³ All ACT results

are obtained from the Hemochron® (International Technidyne Corporation, Edison, NJ), and heparin levels are presently measured with the Hepcon® (HemoTec Incorporated, Englewood, CO).

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