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Temperature and Neuromuscular Blockade

To the Editor:—In a recent clinical report, Park and Macnamara¹ demonstrated coincident changes in evoked adductor pollicis muscle twitch height and central body temperatures during hypothermic extracorporeal circulation. However, their conclusion that cooling enhances and rewarming antagonizes the neuromuscular blocking properties of *d*-tubocurarine and pancuronium is not supported by their data as presented. Severe, unpredictable core-extremity temperature differences during extracorporeal circulation have been observed frequently by us and by others.^{2,3} The observation by Park and Macnamara that the muscle temperatures of two patients “showed changes comparable to the changes in rectal temperatures” is not sufficient to justify the conclusions drawn from the data of the remaining 14 patients, in whom muscle temperature was not measured. I re-emphasize the point made in a previous study* of

* Conrad DP, Muravchick S: Hypothermia and neuromuscular blockade by pancuronium in man (abstr). Annual meeting of the American Society of Anesthesiologists, 1977, pp 373–374

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In reply:—The advantage of cooling blood by extracorporeal circulation over surface cooling is that there is more rapid and generalized decrease in the body temperature without “after-drop.”¹ During cooling and rewarming of blood, the speed of temperature change in each tissue varies, depending upon the blood supply to the tissue. With the rich blood supply to the nasopharynx, its temperature changes more rapidly than those of the rectum and hand muscles, whose blood supplies are less. While there could have been a minor discrepancy in the speeds of temperature changes between hand muscles and rectum in some of our patients, we do not believe that change in the hand muscle temperature would be different

this phenomenon: namely that demonstration of a relationship *in vivo* between temperature and neuromuscular blockade requires continuous, direct measurement of the temperature of the muscle being stimulated.

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3. Smith NT: Subcutaneous, muscle, and body temperatures in anesthetized man. *J Appl Physiol* 17:306–310, 1962

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from the temperature changes measured in our study. We are in agreement that muscle temperature should be monitored in all studies of neuromuscular blockade.

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