

LETTERS TO THE EDITOR

Neutrophil chemotaxis and adhesion in preterm babies

SIR,—I read with interest the recent article by Carr *et al* describing neutrophil function in premature infants.¹ They report lower expression of CD11b/CD18 on the surface of neutrophils after stimulation with 10^{-8} M fMLP in both premature and term neonates than in adults, extending the observations of previous reports into the premature age range.²⁻⁵ However, they report these data as mean channel number (a linear scale) for each cell population, when their flow cytometer fluorescence amplifier was set to a 3 decade logarithmic mode. Should these data be converted mathematically into relative specific fluorescence values [relative fluorescence = antilog (mean fluorescence channel number/number of channels per decade)] the values would be proportional to the expression of the protein on the cell surface and would demonstrate the much greater differences that exist between these groups than is suggested by the report.

Their account suggests that suspensions of neutrophils were kept on ice after preparation and then rewarmed to 37°C when stimulated with fMLP. It has been reported that such temperature changes themselves induce changes in neutrophil CD11/CD18 expression and adhesive function.⁶ This problem could be circumvented in future studies by stimulating the cells in whole blood, followed by an erythrocyte lysis step, before cytometry.

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- 2 Jones DH, Schmalstieg FC, Dempsey K, *et al*. Subcellular distribution and mobilisation of MAC-1 (CD11b/CD18) in neonatal neutrophils. *Blood* 1990;75:488-98.
- 3 Anderson DC, Rothlein R, Marlin SD, Krater SS, Smith CW. Impaired transendothelial migration by neonatal neutrophils: abnormali-

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- 4 Anderson DC, Freeman KL, Heerdt B, Hughes BJ, Jack RM, Smith CW. Abnormal stimulated adherence of neonatal granulocytes: impaired induction of surface Mac-1 by chemotactic factors or secretagogues. *Blood* 1987;70:740-50.
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Use of sedatives and muscle relaxants in newborn babies receiving mechanical ventilation

SIR,—We wish to comment on two points raised by Levene and Quinn in their recent article. Firstly, they state that 'pancuronium should not alter blood pressure'. In fact blood pressure, heart rate, and catecholamine concentrations have been shown to rise in neonates after administration of pancuronium.² This phenomenon is well documented in adults.³ The underlying mechanism is an indirect sympathomimetic effect due to promotion of noradrenaline release⁴ and blockade of its reuptake⁵ at sympathetic nerve endings. Conflicting reports on the effect of pancuronium in neonates may reflect the multifactorial influences (which cannot be scientifically controlled) on pulse rate and blood pressure in critically ill patients. Secondly, in their study comparing three groups receiving (i) morphine alone, (ii) morphine and pancuronium, and (iii) pancuronium alone there was a modest reduction in noradrenaline concentrations only in the morphine alone group, which they attribute to an effect of morphine. Alternatively, the use of pancuronium may increase noradrenaline concentrations in both the other two groups to produce the observed difference.

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- 1 Levene MI, Quinn MW. Use of sedatives and muscle relaxants in newborn babies receiving mechanical ventilation. *Arch Dis Child* 1992; 67:870-3.
- 2 Cabal LA, Siassi B, Artal R, Gonzalez F, Hodgman J, Plajstek C. Cardiovascular and catecholamine changes after administration of pancuronium in distressed neonates. *Pediatrics* 1985;75:284-7.
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Professor Levene and Dr Quinn comment:

We thank Drs Walker and Moorse for their interest in our paper. We agree that there are theoretical reasons why pancuronium should increase neonatal blood pressure and heart rate but this has only been shown to occur in the one study that they quote. Other studies have shown conflicting results perhaps, as they suggest, because of multifactorial influences.^{1,2}

With reference to their second point we do not believe that pancuronium actually causes the noradrenaline concentrations to increase. In our controlled study of pancuronium and morphine in the sick neonate,³ the noradrenaline concentrations showed a non-significant fall before and after the administration of pancuronium from a median (range) of 5.7 (1.9-14.1) to 4.2 (2.6-35.1) nmol/l.

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- 3 Quinn MW, Otoo F, Rushforth JA, *et al*. Effect of morphine and pancuronium on the stress response in ventilated preterm infants. *Early Hum Dev* (in press).