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Dr Scherjon comments:

The most obvious difference in the analysis presented in the letter of Kempley *et al* and our study is that our analysis is based on 10 longitudinal measurements, instead of two point measurements. We are therefore able to analyse the contribution of several variables to a repeated measurement model.

We used values of MAP and PCO₂ (as did Kempley), but also analysed both variables as covariates changing over time. Thus the effect of MAP and PCO₂ both on the patient specific level of CBFV and the within patient time course on CBFV could be estimated. Secondly, our model included gestational age as a possible confounding variable. The latter seems to be essential in the interpretation of the results. Growth retardation (IUGR) was defined by a raised antenatal umbilical/cerebral pulsatility index ratio (U'/'C''): an index indicating fetal haemodynamic redistribution and very strictly related to neonatal birthweight.¹ For this reply a more classic definition of SGA, using the fetal growth ratio (FGR), was used. The lower limit for appropriate fetal growth was 80%, corresponding to the 4.3 birthweight centile.²

If gestational age is not included in the model (table 1) MAP has a significant contribution to CBFV; if gestational age is included in the model its contribution disappears.

Interestingly, the interaction component between IUGR grouping and MAP_{trend} appeared to be significant only for the FGR definition. This suggests that there might be a different effect of MAP_{trend} on CBFV for IUGR compared with non-IUGR infants (IUGR defined by FGR and not by the U'/'C'') ratio).

We therefore repeated the analysis for the

two growth retardation definitions. For the normal FGR infants and not for the normal U'/'C'') ratio group, we found a significant contribution of the time course of blood pressure changes on CBFV changes, but the absolute levels of MAP seem to have no contribution to the model (table 2).

We agree with Kempley that there seems to be a different setting for the regulation of CBFV between appropriately grown and SGA neonates, although we did find the effect when FGR alone is used as the definition of SGA. We also could not show the effect for the absolute MAP values on CBFV. It might be, as was suggested in the original article, that SGA is associated with a more stable CBFV, and therefore this would explain the lower incidence of severe intracranial pathology found in the growth retarded group.

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Neonatal abstinence syndrome

EDITOR,—Our clinical experience of neonatal abstinence syndrome (NAS) differs from that in Liverpool described by Shaw and McIvor, who focused on methadone.¹ During the period 1989-94 inclusive, we identified 39 babies at risk of NAS. Of these, two (5%) had mothers with a history of drug use who denied current use, one (3%) mother took codeine, five (13%) used heroin, 22 (56%) used methadone and nine (23%) did not use opiates at all (largely alcohol and amphetamines). Of the mothers using methadone, five (23%) took methadone alone, eight (36%) took heroin in early pregnancy followed by methadone as part

of a detoxification regimen, and nine (41%) were polypharmacy users.

The median time to onset of withdrawal for the methadone group was 30 hours (range 0-7 days) and for the heroin group 1.5 (range 1-2) days. Median duration of medical treatment for the methadone group was 23 (range 0-80) days and for the heroin group, 4.5 (range 0-8) days. The median length of stay in hospital for the methadone group was 22.5 (range 6-107) days - one baby was successfully withdrawn from morphine at home under close supervision - the median for the heroin group was 12.5 (range 7-15) days.

Of the babies exposed to methadone, 18 (81%) were placed at home, the others being fostered. Follow up appointments at this hospital were kept by 12 (55%) babies, two (9%) attended for appointments at referring hospitals, two (9%) moved and were offered follow up with a local paediatrician (outcome unknown), and six (27%) were chronic non-attenders. Of the heroin group, one baby was adopted and the rest stayed with their mothers. Two (40%) were followed up on more than one occasion, one attended outpatients only once, and two (40%) never attended. There was one death in a baby exposed to methadone and heroin who died at the age of 6 weeks from meningococcal septicaemia.

Even though the Liverpool figures suggest an earlier and less severe withdrawal from methadone than has previously been suggested² we cannot be certain that the mothers were not taking heroin in addition to methadone. Our figures suggest a wider range of onset and a more protracted course of NAS with methadone. We would caution paediatricians to be aware of the pattern of local drug use before altering observation policy for NAS on the basis of one paper.

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Pros and cons of antiseptic cord care

EDITOR,—A recent letter points out that antiseptic agents may delay separation of the umbilical cord.¹ However, certain agents can hasten cord separation. This has public health implications. In many non-industrial settings the period from birth to cord separation is an important rite of passage during which varied social and dietary taboos are observed.

Among the pastoralist peoples of southern Sudan, where neonatal tetanus is common and seems to be related to traditional cord care techniques,² cord care kits were promoted in the 1980s. When I interviewed mothers of babies with tetanus neonatorum (n=35, unpublished data) none had used cord care kits. Seventy five per cent had applied earth to the cord which had been collected from a number of ritually important sites. When asked why this was done most replied that it helped to expedite the process of cord separation. In traditional village culture in this region mother and baby are segregated in the family hut and extensive dietary restrictions are enforced until the cord separates, when mother and infant become the focus of a collective feast. Women prefer

Table 1 Variables significantly contributing to the model: repeated measurements model

Model	U'/'C'') ratio	U'/'C'') ratio	FGR ratio	FGR ratio
Time	0.00	0.00	0.00	0.00
GA	Not included	0.00	Not included	0.00
IUGR	0.00	0.04	0.00	0.01
IUGR*MAP _{time course} *	0.14	0.16	0.07	0.02
CO ₂ time course	0.00	0.00	0.00	0.00
CO ₂ level	0.00	0.00	0.00	0.00
MAP _{time course}	0.23	0.26	0.56	0.38
MAP _{level}	0.00	0.14	0.01	0.18

GA: gestational age; IUGR: fetal growth retardation as defined by U'/'C'') ratio or FGR; MAP: mean arterial blood pressure; CO₂: transcutaneous PCO₂; *interaction component between MAP_{trend} and IUGR.

Table 2 Variables significantly contributing to the model: repeated measurements model

Model	U'/'C'') ratio: normal (n=63)	U'/'C'') ratio: raised (n=35)	FGR ratio: normal (n=70)	FRG ratio: low (n=33)
Time	0.00	0.00	0.00	0.00
Gestational age	0.01	0.04	0.01	0.03
CO ₂ time course	0.00	0.00	0.00	0.02
CO ₂ level	0.00	0.16	0.00	0.2
MAP _{time course}	0.09	0.67	0.01	0.47
MAP _{level}	0.36	0.27	0.56	0.17

methods of cord care which hasten the happy conclusion of this ritual seclusion. Policy makers should be aware that home cord care kits which prolong the time to cord separation may not be taken up by the target population.

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Cardiac arrest associated with vancomycin in a neonate

EDITOR,—A 13 day old newborn girl was treated for an *Escherichia coli* infection with a once daily, 20 minute infusion of 150 mg of ceftriaxone. Progress was normal until vancomycin (150 mg) was mistakenly injected intravenously over 20 minutes. Within 10 minutes she stopped breathing and became cyanotic; pulse and cardiac sounds were absent. Bag ventilation with 100% oxygen and chest compressions were immediately started. An endotracheal intubation was performed. The infant recovered within one minute from her cardiac arrest. The evolution during the following 18 months has been favourable.

To our knowledge, four other cases of cardiac arrest after a rapid infusion of vancomycin have been reported involving one adult and three children.¹⁻⁴ Of these, two infants died. No cardiac arrest in a newborn baby has been described before.

This report of a cardiac arrest in a neonate, after a rapid intravenous infection of vancomycin, strengthens the usual recommendation that this drug should be administered over a prolonged time. The proportion of young children (four out of five) among the reported cases might suggest that a rapid infusion of vancomycin could particularly lead to a cardiac arrest in this age group. This major side effect of vancomycin could be related to a neuromuscular blockage or a ventricular arrhythmia,² a direct transient depression of the cardiac function,³ or an extreme form of an anaphylactoid reaction.

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Intestinal dilatation in the fetus

EDITOR,—Richards and Holmes have described a series of nine cases with intestinal dilatation in the fetus, all with surgical



Antenatal ultrasound scan showing intestinal dilatation.

aetiology.¹ Similar findings are also seen in congenital chloride diarrhoea.²

We admitted a baby girl after delivery, for observation and investigations for similar findings on antenatal ultrasound scan (figure). Physical examination was unremarkable as was a plain x-ray picture of the abdomen. Stools had the consistency of urine and could only be collected with a Foley's catheter in the rectum. Diagnosis of chloride diarrhoea was confirmed by a stool chloride of 137 mmol/l.³ She responded satisfactorily to adequate fluid and electrolyte replacement.

It is quite easy to confuse the watery stools of congenital chloride diarrhoea with urine and thus miss the diagnosis. In an apparently normal child with a history of intestinal dilatation in the antenatal period, examination of the stools should be done before any invasive procedure such as suction biopsy.

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Predictors for mortality

EDITOR,—Kuint *et al* have presented the use of the change in the a:A ratio from just before dosing to one hour after dosing as a significant predictor of mortality.¹ Their basis for recommending this predictor is its correlation with mortality. The traditional measures of the predictive ability of a model for dichotomous outcomes include rates of false positive and false negative results or equivalently, sensitivity and specificity.² A model that has high predictive power will have low error rates or high specificity and sensitivity and thus

correlation close to unity. However, the P value that Kuint *et al* report corresponds to a null hypothesis that the correlation is zero, whereas prognostic value depends on the correlation being close to unity. Ironically, they present false positive and negative rates from a model studied by Patterson *et al*,³ and suggest that this model could be improved by the addition of a:A ratio, while failing to provide the same information for their own model. Without these rates, the prognostic value of a:A ratio for mortality cannot be evaluated.

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Guidance after twin and singleton death

EDITOR,—In relation to the perinatal death of a twin baby Dr de Kleine and colleagues recommend that all parents should be given a photograph of their babies together, as well as separately.¹ Not all parents would feel comfortable about displaying a photograph of a stillborn baby, but an attractive picture of the two babies can readily be created (sometimes from two separate photographs). We would be happy to provide names of artists prepared to do this.

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