
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 potential 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 more classic definition of SGA, using the fetal growth ratio (FGR), was used. The lower limit of 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 between IUGR grouping and MAP_gest appeared to be significant only for the mother's period. This suggests that there might be a different effect of MAP_gest 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 FGR ratio group we found a significant contribution of the time course of blood pressure changes on CBFV changes, 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 not show 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 of onset of withdrawal for the methadone group was 30 hours (range 0–7 days) and for the heroin group 1·5 days (range 1–2 days). Median duration of medical treatment for the methadone group was 23 (range 8–90) 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 days (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 days (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 that the onset of 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 umbilical cord site. 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 no drastic 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

<table>
<thead>
<tr>
<th>Model</th>
<th>U' IC' ratiot</th>
<th>U' IC' ratio</th>
<th>FGR ratio: Time</th>
<th>FGR ratio: Gestational age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>0/0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>GA</td>
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<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
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<td>0.14</td>
<td>0.16</td>
<td>0.07</td>
<td>0.02</td>
</tr>
<tr>
<td>MAP_gest</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>MAP_gest time course</td>
<td>0.23</td>
<td>0.26</td>
<td>0.01</td>
<td>0.18</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Model</th>
<th>U' IC' ratio: normal</th>
<th>U' IC' ratio: raised</th>
<th>FGR ratio: normal</th>
<th>FGR ratio: low</th>
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<tbody>
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</tr>
<tr>
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<td>0.02</td>
</tr>
<tr>
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<td>0.16</td>
<td>0.00</td>
<td>0.2</td>
</tr>
<tr>
<td>MAP_gest time course</td>
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<td>0.27</td>
<td>0.56</td>
<td>0.17</td>
</tr>
</tbody>
</table>

GB: 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_gest and IUGR.