LABOUR-ASSOCIATED CHANGES IN HUMAN FETAL MEMBRANES AND PLACENTAL ADRENOMEDULLIN MRNA EXPRESSION

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We have recently shown that total adrenomedullin (AdM) concentrations are elevated in choriodecidual and amniotic tissues, but not in placental, in response to human labour at term and pre-term (1). Therefore, the present study was designed to determine whether AdM mRNA expression was increased with labour in term and pre-term samples by using Northern Blot Analysis. Placentas were collected either at elective caesarean section (not-in-labour, NIL), after normal vaginal deliveries and at caesarean section during labour (in-labour, IL) from women with singleton pregnancies at term (>36 weeks gestation, 39.2 ± 0.2) or pre-term (between 24 to 36 weeks gestation, 32 ± 0.4), but with otherwise uneventful antenatal courses.

There were significant labour-induced increases in AdM mRNA expressions in amnion and choriodecidua in both groups, pre-term and term.

Relative abundance of AdM mRNA expressed as a ratio to 18S rRNA (mean ± s.e.m.)

	Pre-term NIL	Pre-term IL	Term NIL	Term IL
Amnion	1.4±0.15, *n* = 13	2.4±0.9*, *n* = 10	3.4±0.7, *n* = 11	10.1±1.3*, *n* = 10
Choriodecidua	5 ±0.5, *n* = 10	13.1±1.2*,*n* = 15	7.5±0.7, *n* = 15	14.1±1.1*, *n* = 10
Placenta	13.7±1.9, *n* = 10	19 ± 2*, *n* = 10	13 ± 1.9, *n* = 10	14.1 ± 1.5, *n* = 11

*Significantly increased compared with corresponding NIL group (ANOVA).

No difference was found in those who had vaginal deliveries with those who had caesarean sections after the commencement of labour at pre-term. Amongst term samples in labour all subjects were delivered vaginally uneventfully, except two cases where forceps were used in the third stage of labour.

AdM mRNA levels are increased in association with both term and pre-term labour, both in amnion and choriodecidua. We postulate that increased production of AdM by fetal membranes in association with labour may be involved in fetal and/or maternal adaptations to labour. For example, AdM may compensate for local-acting vasoconstrictor substances that are increased during labour, or it may act on the fetal lung in preparation for extra-uterine life.

(1) Al-Ghafra A, Gude NM, Brennecke SP, King RG (2003) Labour-associated changes in adrenomedullin content in human placenta and fetal membranes. *Clin. Sci.* **105**, 419–423.

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