

## **Hormones in labour**

It is still not known exactly what happens to start spontaneous labour. Most likely it is a combination of the baby's stage of maturity and the physical and emotional state of the mother's health. But the contractions of the uterus are caused by rising levels of the hormone oxytocin, which has multiple functions in childbirth.

Like all other female mammals, women tend to seek a safe and private place to give birth. The promotion of normal birth includes enabling a woman in labour to focus totally on her own body, feelings and wishes, without distraction.

A move from home to hospital, or even a move from one room to another, can reduce the oxytocin level and slow or disrupt the progress of labour. If a woman in labour feels anxiety, tension or fear, the 'stress hormones' (such as catecholamines, including adrenaline) rise and stop the release of oxytocin.

## **Hormones and pain in labour**

Hormones also have an effect on the way pain is experienced in labour. The hormone called beta-endorphin is an opiate or pain-killer that occurs naturally in the body. It is similar in a number of ways to the synthetically produced drugs pethidine and morphine. As with oxytocin, there are high levels of beta-endorphin in the body during pregnancy, birth and breastfeeding. Beta-endorphin is released under conditions of duress and pain, when it acts as a pain-killer and also suppresses the immune system. This effect may be important in preventing a pregnant mother's immune system from acting against her baby, who has different genetic make-up from her.

Very high levels of beta-endorphin, triggered by pain, cause the oxytocin level to reduce and contractions will slow down slightly. In this way, labour that progresses normally is kept at a pace that is bearable for the woman as she benefits from the natural analgesic effect of the hormone.

## **Second stage of labour and birth of the baby**

The subtle balance of hormones changes again when the cervix reaches full dilation. This phase is called the 'transition' as the labour moves towards the second stage and the birth of the baby. There may be a rise in adrenaline to provide the energy needed for pushing in the second stage. The effect on the woman may be challenging, as she can feel shivery, nauseous, unable to cope and physically and emotionally exhausted. Reassurance and encouragement are the best approaches, as the labour is nearing its end.

It is oxytocin that triggers the 'fetal ejection reflex' – the final series of muscular contractions that push the baby out – but noradrenaline, one of the catecholamines, also seems to be a factor.

At this time, another hormone 'prolactin', which is sometimes called 'the mothering hormone' becomes significant. Prolactin is the major hormone of breast milk synthesis and breastfeeding, and it is present throughout pregnancy. Levels rise during labour and peak around birth, though they remain high while breastfeeding continues. Beta-endorphin facilitates the release of prolactin during labour, which prepares the mother's breasts for lactation and also aids in the final stages of lung maturation for the baby.

The baby also produces prolactin during pregnancy, and high levels are found in amniotic fluid.

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### **Third stage of labour and immediate postnatal period**

Oxytocin's function in keeping the uterine contractions going continues after the baby is born. The contractions now push the placenta out of the uterus, close off the blood vessels that were attached to it and begin to shrink the uterus back to its original size. If this process does not work successfully, it increases the risk of heavy bleeding, known as postpartum haemorrhage. Often, synthetic oxytocin (which may be called 'syntocinon') is injected into the mother, to help the contractions, though many women prefer to wait for a natural delivery of the placenta.

Emotionally, the high levels of oxytocin in both mother and baby at this time promote affection, attachment and a desire in the mother to protect and guard the baby. Oxytocin promotes the let-down reflex, too, which enables the breasts to produce milk. Beta-endorphin is also important in breastfeeding. Levels peak in the mother at 20 minutes after birth, and beta-endorphin is also present in breast milk, helping to create a pleasurable mutual dependency for mother and baby in their ongoing relationship.

### **Hormones and feelings after the birth**

The period about two to three days after the birth when the mother may feel tearful and upset is often referred to as the 'baby blues', and can be explained in part by the action of hormones. There are a number of factors which contribute to this, and the falling levels of most of the hormones described are probably a major cause.