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REFERENCES

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Irritable Babies – How research findings can help

Introduction

In Western societies, about 10-15% of parents seek professional help because their baby cries repeatedly, for prolonged amounts of time, without apparent reason. As well as distressing parents, this phenomenon is expensive for health services. Morris and colleagues, for instance, estimated that professional support for infant crying and sleeping problems in 1-12 week-old babies cost the UK National Health Service almost £66 million in 1997[1].

A recent review of the paediatric literature by Gormally & Barr's concluded that organic disturbances, including cow's milk protein intolerance, account for less than 10% of cases where persistent crying in 1-3 month old babies is the presenting condition[2]. In contrast, there is extensive evidence that babies in general peak in their crying in the first three months of age. As a consequence, the crying is increasingly being viewed as normative, perhaps due to a neuro-developmental 'shift' which occurs at this age, while babies who cry a lot are considered to be at the far end of the normal distribution.

In keeping with this viewpoint, a number of recent studies have reported that above-average crying is due to a temperament-like predisposition to be irritable. The aim here is to summarise this evidence and to consider the implications of this view of early crying for healthcare practice.

The 'Irritability Hypothesis'

The terms 'crying' and 'fussing' (or 'fretting') refer to the behaviours heard, and seen, by parents. In contrast, the word 'irritable' denotes a disposition underlying these behaviours. For a given stress or challenge, the idea is that some babies will respond by crying more intensely, or persistently, than most others. The words 'reactivity' and 'regulation' of response, used by temperament theorists, have similar connotations. By definition, a highly reactive individual responds rapidly and intensely to stimulation, while inability to inhibit, or regulate, a reaction will prolong a response (such as crying).

The first systematic evidence that persistent crying in young babies might be due to an irritable disposition came from observations of naturalistic behaviour at home. In 1995, Sue Conroy, Katie Wilsher and Ian St James-Roberts reported that 67 six week old babies who met a standard definition for prolonged crying (3 or more hours per day, on average), were difficult to soothe for trained researchers, using standard soothing manoeuvres, as well as for mothers[3]. The mothers of these babies were observed to be highly sensitive and responsive in their care behaviour, so that many of them received optimum scores on these measures[4]. The few differences there were between these and other mothers' behaviour were explainable in terms of the efforts made by the mothers to contain their babies' crying. Other findings, too, support the argument that variations in care-giving are probably not the explanation for most cases of prolonged crying in young babies. For instance, first-borns do not cry more at this age than later-borns, which would be expected if parental inexperience was a cause. Parental

demographic characteristics are also a poor predictor of the amounts babies cry.

More recently, the conclusion that babies' inability to self-soothe, or be soothed by others, is a core reason for prolonged crying has been confirmed by Prudhomme White and colleagues' careful laboratory study[5]. When given a standard, mildly challenging, clinical examination babies selected for prolonged crying fussed and cried more intensely, and for longer, than comparison six week olds. Using a rating scale which asks parents to report specifically on their baby's reactivity to stimulation, Barr and colleagues found that babies selected for prolonged crying were rated significantly more reactive than moderate criers[6]. In another study, this group found that sucrose, which is usually effective in stopping crying, had much more transient effects in six week old infants selected for prolonged crying[7].

In sum, these and other sources of evidence support the conclusion that some 1-3 month old infants are objectively 'irritable', independent of who is interacting with them. It is plausible that their highly reactive and unsoothable dispositions lead these babies to cry more intensely, and for longer periods, than other babies.

Implications of the findings

It is a step forward to have established that some babies are objectively irritable, but we still need to understand the origins of their irritability and to develop strategies that help parents to manage and cope with their unsoothable crying. An intriguing question is whether, as is often assumed, the crying means that something is wrong with the baby. This may be the case, so studies that trace possible precursors, such as stress or ill health during pregnancy, are certainly needed. A contrasting viewpoint, suggested by DeVries' famine study[8], is that the crying signifies a baby's fitness. The point here is that crying is metabolically costly, so that a baby who can maintain a high level of crying is demonstrating considerable vigour. In the context of a famine, DeVries reported that irritable babies were more inclined to survive, while more placid babies perished, presumably because the crying recruited parental care. As well as highlighting the need to examine our assumptions and to think about crying in relation to its context, this example draws attention to the lack of evidence that prolonged crying generally has poor outcomes. Providing that parents have the resources to cope, Lehtonen's reviews have shown that the outcomes are good in most cases[9].

In addition to the need for further research, the findings to date suggest a number of principles for healthcare policy and practice:

- First, since prolonged crying in the early weeks is associated with organic disturbances in rare cases, clinicians should expect them to be infrequent and know how to distinguish them. Gormally[10] proposes that the 'red flags' for an organic disturbance are: crying which sounds extreme or high pitched; lack of a diurnal rhythm to the crying; presence of frequent regurgitation, vomiting, diarrhoea and/or weight loss; a family history of migraine; maternal drug taking; a positive physical examination; persistence of symptoms after 4 months of age. Gormally & Barr[2] note that, although this list is evidence based, it is provisional and in need of further testing and refinement.
- Second, since the clinical phenomenon is usually parental complaint about a baby's crying, there is an obvious need for accurate assessment of the baby's actual behaviour. Behaviour diaries are the method of choice, but questionnaires or interviews are available where diaries are impractical. The resulting information may reassure parents and help to guide interventions.
- Thirdly, since the clinical phenomenon involves parents, the primary work-up should always collect information about the parents' vulnerabilities and supports. Murray and colleagues have shown that an irritable baby can trigger depression in mothers who are prone to it[11]. Other potential vulnerabilities, suggested by Papousek's studies, are those that put families at risk more generally, such as single parenthood and marital dissatisfaction[12]. While the evidence indicates that the outcome for crying babies is good in most cases, it may be poor in the presence of risk factors of this kind. For clinical services with their own resource limitations, these findings identify the need for policies and practices that allow vulnerable parents to be accurately targeted and supported.

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Reflux and Irritability

Introduction

Persistent infant distress is often presumed to have a gut cause and interventions usually involve digestion and feeding, such as weaning, formula changes, gripe waters, and colic mixtures. Infant irritability is commonly attributed to oesophagitis presumed to be caused by pathological gastroesophageal reflux (including 'silent reflux') and treatment with anti reflux medications has become popular, despite the lack of evidence about its efficacy. All infants reflux to some extent. Frequent or prolonged episodes of acid reflux may cause irritation or inflammation of the lower oesophagus that may have a role in infant irritability.

The lack of empirical knowledge about the role of reflux in infant distress prompted a prospective research study of otherwise healthy infants admitted to RCH for investigation of persistent irritability. One aim of the study was to identify clinical predictors of pathological reflux. The other aim was to evaluate the effectiveness of anti reflux medications in infants who had mild to moderate (but still within the normal range) gastroesophageal reflux[1].

Only 19% of the infants who presented to the hospital had pathological reflux as measured by 24 hour oesophageal pH monitoring (Fraction Reflux Time greater than 10%). This is likely to be a much higher incidence than in the community as:

- parents who brought their infants to the Emergency Department had usually seen several doctors,
- a quarter had had previous admission to a hospital or mother baby unit for irritability,
- half the sample were over 3 months of age, and
- the group included an equal number of first and second born infants.

This study found no correlation between the amount the infant cried and reflux measured by pH monitoring. One third of the younger infants and two thirds of those aged over 3 months of age were reported to have feeding difficulties and 73% had sleeping problems. However, feeding difficulties, feeding refusal, feeding refusal when hungry, back arching and extending the head were not predictors of pathological gastroesophageal reflux.
The only significant clinical predictor of pathological gastroesophageal reflux was vomiting frequency (not volume). Infants who vomited more than 5 times a day were more likely to have pathological reflux[2].

The study also found that anti reflux medications were no more helpful than placebo medications in reducing the amount that infants with normal reflux cried. Maternal report of improvements in infant crying or other aspects of behaviour (ability to be consoled, routine, response to comfort) were similar for infants who had been on anti reflux or placebo medications.

If not reflux, then what?

Crying has been described as an 'impoverished' and graded signal. Crying reflects the degree of distress and not the cause of the distress. It may be helpful to have a framework for understanding infant irritability that can accommodate an appreciation of the infant's emotional as well as physical experience.

When there is no identifiable physical abnormality or organic cause with an available medical remedy, for the infant's irritability, the clinical task becomes how the clinician and parents can help the baby deal with their discomfort and distress. The irritable infant may be struggling to cope with physical sensations and experiences (digestion, elimination, normal reflux, tiredness, hunger) that fall within the normal range but are experienced as too startling, overwhelming or frightening. The infant's response needs to be understood in the context of the emotional development of the infant and the developing infant parent relationship. Social and cultural beliefs, as well as the parents own psychological style and family experience, with influence how they understand, react to and help their baby deal with distress.

Persistently crying infants are a heterogeneous group. The factors that exacerbated crying initially may not be the factors that are perpetuating it.

One of the tasks of earliest infancy is to for the infant to anticipate and make links with the maternal care that satisfies the infant's needs. Thus, when things go well, the infant learns that hunger is ameliorated with a satisfying feed, that tiredness disappears with sleep, desire for emotional contact is met by holding and talking, boredom alleviated with play or change of environment. It may be more helpful to think about the mother's role in helping the infant deal with the infant's own anxiety, rather than necessarily seeing the infant's distress as caused by maternal anxiety. Maternal depression, anxiety, a tentative pregnancy, unresolved feelings about the baby's conception, loss or grief or other emotional conflicts may complicate this process.

It has been argued that attachment behaviours (sucking, clinging, following, crying, and smiling) have a biological base and ensure the infant's survival by promoting the infant's close proximity to a parent. An infant whose cry is responded to in an inconsistent manner - at times picked up immediately at other times left to cry for long periods - will not have learnt to anticipate a graded response to their needs and is likely to feel insecure and uncertain about their needs being met. Their insecurity and anxiety may prompt crying as an almost universal response to any upset. If multiple formulas and soothing regimes have been tried, or the infant has been alternately left to cry alone or comforted, it is easy to imagine that they have difficulty in achieving a sense of agency and containment and that this might exacerbate a frightening view of the world. Parents who are frightened about their babies becoming 'too dependent' may need developmental guidance explaining that infants need to build a sense of security and trust in a responsive world before they are able to manage more on their own and settle themselves.

It is hard for the infant to be convinced that they are all right when parents are frantically worrying whether they are in pain or unwell and anxiously changing from one soothing strategy to another such as patting to rocking to walking the floor. Rather than reassuring the infant that they are all right, that the upset can be survived and managed, the infant may get the message that there really is something to worry about and an escalating cycle of anxiety and crying ensues. Helping the parents to read their infant's behavioural cues, including the cry, as an indicator of the infant's emotional state and reactivity and ways of self regulating may be helpful. A baby who is easily overwhelmed may need more buffering and gentle, graduated exposure to new situations or change in pace such as to changing nappy or the bath or being put to bed. A baby who frantically looks around the room when distressed may need to be held in a position where their mother's face is available for them to lock onto and to be gently engaged in cooing and talking about their distress. A baby who quickly retreats from the impingements of the world, including parental attempts to soothe, and who seems unreachable may need gentle rather than vigorous reminders from the parents that they are still there. Infants who are easily disorganised and not very adaptable may need predictable routines. The introduction of a predictable routine of feeds and settling can help the world become less chaotic and frightening and make the baby's cues clearer to read and the parent's messages to the baby clearer to understand.

Parents may also need to persist for longer with attempts at comfort and not to give up too easily in the belief that what they are doing is 'not working'. Sometimes parents have become so governed by a campaign to soothe the baby and avert their crying, that they spend the whole day trying to 'down regulate' and 'not over-stimulate' the infant. They worked at reducing the infant's contact with the world to a bare minimum, and not responding to the infant's interactive overtures or providing sufficient playopportunities and experiences. This exacerbates the crying as the infant becomes bored and lonely and cries to try and make contact with the parents. Alternatively some parents try to distract their infant with yet another toy or activity which often works momentarily and achieves a short-term lull in the crying. However, the infant does not learn to deal with anxiety and frustration, and becomes increasingly reliant on illusory distractions that have an increasing threshold before they provide even a brief respite from the crying. These infants might be able to let go of their preoccupations with what happens inside their body, as they become less frightened and more interested and fascinated in a deeper engagement with the world around them. Consistent approaches to soothing the infant that recognise the emotional quality of the infant's crying and attune to this will help the infant learn to anticipate that the distress can be survived.

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