Evaluating irritability in infants and children

Each month we present authoritative advice on the investigation of a common clinical problem, specially written for family doctors by the Board of Continuing Medical Education of the Royal Australasian College of Physicians.

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Crying in well babies is common in the first three months of life. On the other hand, persistent irritability over weeks and months in older infants and young children is an indication of significant emotional distress with possible underlying organic pathology. Knowing normal infant patterns of sleep and crying is helpful to the doctor and reassuring for the parent (Table 1),[1,2] but serious emotional and physical sequelae are risked if some of the more uncommon problems associated with crying are not identified.

This article sets out a clinical approach to the evaluation of irritability in infants and young children. It will also attempt to identify warnings that signal when specialist emotional or physical investigation and intervention are required.

Early infancy (up to 3 months of age)

Infant distress or colic

Approximately one baby in five will cry for more than three hours a day in the first eight weeks of life during adaptation to the extrauterine environment. The process of moving from being a 'visceral reactor' to a 'personal interactor' can be distressing for more reactive, hyperalert babies – as well as for their parents. At the initial clinical assessment, it is paramount to deal with the issues of feeding, swaddling, care and parental confidence. Most distressed infants will improve, but persistent mother–infant distress can become generalised and ongoing.[3]

The many factors involved in the aetiology of infant distress are outlined in Figure 1. Although relatively uncommon, intimacy or nurturing trauma in a parent's background can be a significant issue that needs to be explored sensitively during the assessment.

Increased visceral peristalsis

Possible causes of increased visceral peristalsis that may lead to increased crying in the hyperalert infant include allergy to cow's milk, which occurs in approximately 10% of crying babies;

IN SUMMARY

- **In many cases of irritability in young babies, reassuring the parents and preventing potentially damaging attachment difficulties are the main focus. In older infants and young children, serious medical and emotional disturbance may need to be identified.**
- **Tending to babies and attempting to settle them in the first three months of life is associated with more settled babies at the age of six months.**
- **To a parent, persistent crying in a baby or young child is both worrying and frustrating. A sensitive, 'blinkers off' approach is necessary if the uncommon but important diagnoses are to be made.**
- **The cardinal signs of organic illness in infancy are poor weight gain, pallor and intermittent fever.**
- **In the evaluation of irritability in infants and children, specific observations of posture, movement and responsiveness with repeat examinations are more useful than pathology tests.**

fewer than 15% of these babies have allergy to soy milk.[5] Lactose overload occurs in well fed, thriving, breastfed babies (with frequent, explosive stool) until milk intake becomes balanced with ability to absorb ingested lactose.

Another cause is gastro-oesophageal reflux, which is less common than previously thought.[6] Oesophagitis is rare in this age group. The gastrocolic reflex, in which peristalsis occurs 15 to 30 minutes after a feed, is another physiological cause of increased peristalsis and reactivity.

Attachment difficulties

Factors that can affect a mother's ability to attach to her infant are listed in Figure 1. Parents should be reassured to note that studies have suggested tending to babies and attempting to settle them in the first three months of life are associated with more settled babies at the age of six months. This means that one cannot 'spoil' a baby in the early months – rather, settling helps infants to be soothed and to adjust to the extrauterine environment, while laying their foundations for emotional attachment.

Useful settling techniques include:

- checking that the baby is dry and not soiled
- regular or rhythmical vibration
- walking
- using a pouch or sling to carry the baby
- talking
- massage
- undoing the nappy, letting the baby kick freely.

Older infants (3 to 12 months of age)

Crying in infants aged between three and four months could still be caused by infant colic. However, persistent crying beyond this age is far more likely to have a pathological cause, such as:

- acute on chronic infections (e.g. otitis media or a urinary tract infection)
- protein allergy
- anaemia (e.g. due to iron deficiency)
- constipation
- attachment difficulty (e.g. due to postnatal depression)
- coeliac disease.

As infants identify their needs and attempt to satisfy these, a battle is occasionally set up with the parents, resulting in a baby who is depressed and unhappy and a parent who is very frustrated and often cross. This dynamic may be played out when trying to establish a sleep pattern.

Persistent, severe, intense crying for hours can occasionally occur in an infant who has previously been settled. It is necessary to identify causes of

Table 1. Time spent crying and sleeping in normal infants[1]

Age	Crying*	Sleeping (hours)*
Up to 3 months (n=78)	1.6 hours, with 14% crying for more than 3 hours	15.2 hours (11.8 to 20.5)
3 to 5 months (n=84)	1.3 hours, with 7% crying for more than 3 hours	14.3 hours (10.0 to 18.5)
6 to 8 months (n=65)	1.4 hours, with 0% crying for more than 3 hours	13.5 hours (10.3 to 17.8)
9 to 12 months (n=43)	1.1 hours, with 0% crying for more than 3.5 hours	13.4 hours (10.3 to 16.0)

* Times shown for crying and sleeping are averages over 24 hours; ranges for sleep time are given in parentheses.

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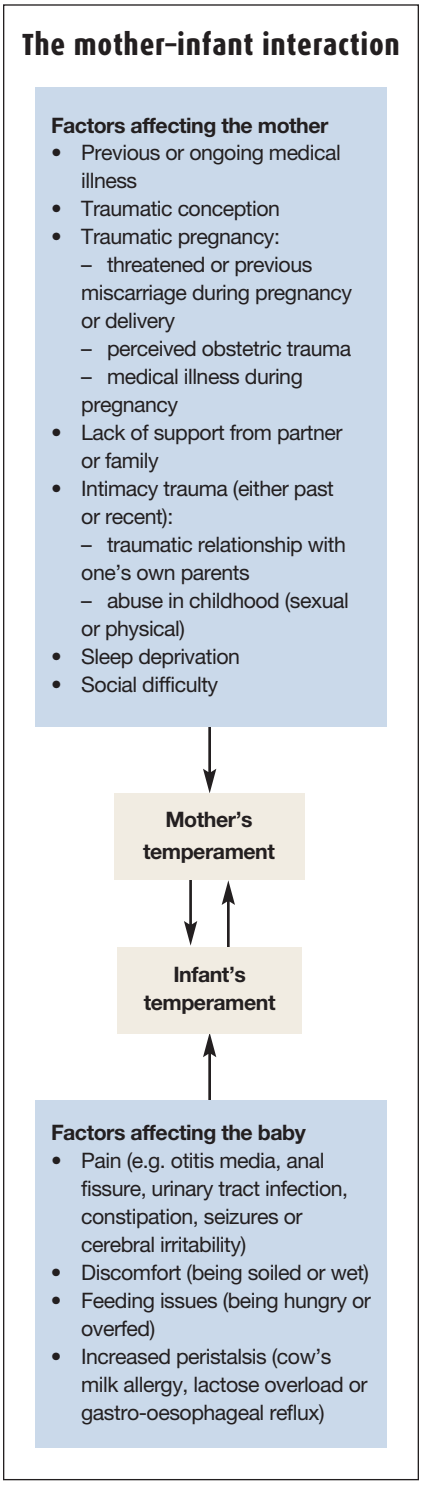

Figure 1. Factors with potential to disrupt the interaction between mother and baby (adapted from reference 4).

pain (such as otitis media, constipation, an anal fissure, hydronephrosis or inguinal hernia), but occasionally nothing will be found – congenital glaucoma and anomalous left coronary artery syndrome are, thankfully, rare. In some babies, distress can cause more distress, setting up a vicious cycle.[3]

Some babies who cry inconsolably go on to have a difficult temperament in childhood and to be more rigid and ritualistic in their play. Children who are later diagnosed as being autistic or suffering from obsessive compulsive disorders can suffer inconsolable crying through their infancy.

Young children (1 to 5 years of age)

Most system disease causing pain in children aged 1 to 5 years also produces more obvious focal symptoms. The more frequent but less obvious causes are listed in Table 2. Each of these needs to be considered specifically during a detailed assessment.

Management issues

To a parent, persistent crying in a baby or young child is both worrying and frustrating. We know that, in some circumstances, abuse is the result. A sensitive, 'blinkers off' approach is necessary if the uncommon but important diagnoses are to be made.

In the first three months, when parents are struggling to attach, appropriate education about what is 'normal' is important (Table 1). If a baby is putting on weight and is well with no indication of organic illness on history or examination, urine microscopy and culture may be the only investigations required.

Diet and dietary changes

Studies vary as to how often a change in breastfeeding mothers' diets or a change from normal formula to either soy or hypoallergenic formula reduce the amount of crying.[7] The figures of 10% of colicky babies responding when taken off dairy protein (with 10 to 15% of these having intolerance to soy milk) are conservative, fitting with experience in clinical practice.

It is not appropriate to withdraw cow's milk protein from every crying baby's diet, nor is it appropriate to use soy formula 'prophylactically'.[8] In better studies, hypoallergenic formula (such as Nutramigen, Pepti-Junior or Pregestimil) has been shown to be more effective than soy formula.[7]

Anecdotally, it seems to be important that breastfeeding mothers keep a healthy diet without excessive caffeine, chocolate or red wine. Otherwise, support, education and time will avoid much unnecessary intervention or dietary change. Ideally, further serological identification of allergic crying babies will be possible in the future.

Table 2. Causes of irritability in young children

Infections
- Recurrent otitis media
- Urinary tract infection
- Sinusitis

Nutritional causes
- Allergy
- Iron deficiency and anaemia
- Coeliac disease

Emotional causes
- Depression
- Child abuse
- Poor attachment

CNS disorders
- Spinal cord pathology
- Tumours or increased intracranial pressure

Bone pain
- Trauma
- Discitis

Cancer
- Neuroblastoma
- Leukaemia

Gastro-oesophageal reflux

The use of thickened formula (or milk thickener) is advised in the older infant (i.e. more than three months of age) with frequent vomiting and crying.[9] The role of cisapride (Prepulsid) is now being questioned, and overuse is being warned against (the cisapride dose should not exceed 0.8 mg/kg/day).[10,11] Contraindications to cisapride include use of erythromycin, ketoconazole, miconazole, fluconazole and clarithromycin (by the baby or the breastfeeding mother), long QT syndrome or hypersensitivity to cisapride. The use of cisapride in vomiting infants in the first three months of life should be uncommon.

Constipation

The relatively simple symptom of constipation at any age causes parents a lot of concern. It is important to ensure the existence of true constipation that is causing distress (i.e. hard, infrequent stool). Since the withdrawal of Maltogen from the market, innocent remedies are harder to find. Brown sugar is being used, but no more than half a teaspoon per feed is recommended. Ensuring adequate fluids and, if necessary, a small dose of liquid paraffin (Agarol, Parachoc) or lactulose (Actilax, Duphalac, Lac-Dol) seems to be very successful. In older infancy, withdrawal of cow's milk protein has been shown to be very successful.

Anal fissures can be hard to see. If constipation is persistent, referral to exclude anal stenosis and Hirschsprung's disease still needs to be considered. Infrequent stool in the early weeks of life (especially the first week) necessitates the exclusion of Hirschsprung's disease.

Lactose overload

Explosive stool in a voracious, breastfed baby (often male) putting on more than 300 g per week, with an anal 'acid' ring, often suggests overfeeding is an issue. This is a demand–supply overload situation which is relatively easy to identify but often difficult to treat. Usually, the situation settles spontaneously as the intestinal villi grow in number and height, and the bowel lengthens in the early months of infancy.

Posture feeding or a period of feeding from a single breast may appropriately diminish supply, but the demand may remain. The lactose content per mL of breastmilk is the same for the fore- and hindmilk, but the increase in fat in the hindmilk may satisfy more and lead to less frequent feeding. Interestingly, breath hydrogen studies suggest that a baby's irritable reaction to the problem improves before the lactose overload ceases.

Organic pathologies

Identification of organic pathologies is appropriate if the clinical setting seems unusual or the baby is pale or failing to thrive. Recommended tests include: full blood examination, C reactive protein, electrolytes, liver function tests, and urine microscopy and culture.

Consideration of abdominal ultrasound is also recommended.

The cardinal signs of organic illness in infancy are poor weight gain, pallor and intermittent fever. In the older infant and younger child, a very careful history and examination are needed to identify the rare causes of irritability, such as bone pain, coeliac disease and cerebral causes. Specific observation of posture, movement and responsiveness with repeat examination are more useful interventions than pathology tests, which are 'fishing trips' at the expense of the baby, parents and taxpayer.

Concluding comments

While crying in early infancy is common, identification and management of the more vulnerable mothers and babies can be difficult, requiring time, sensitivity and clinical acumen. Persistent irritability in older infants and children can often herald serious psychogenic and/or medical problems. MT

A list of references is available on request.

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