

Some new and important clues to the causes of colic

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Colic or persistent unexplained crying in infants is a disorder commonly encountered by health professionals. Although colic is not detrimental to an infant's health it can place stress on the family. Researchers have investigated a wide variety of therapies including formulae change, pharmacotherapy, and infant positioning manoeuvres but study results have been conflicting.

Advising the family to simply 'wait it out' is not sufficient. Colic can interfere with parent-child bonding, cause discord in a marriage and increase the risk of child abuse (Sumpter, 1987; Wolke et al, 1994).

Presentation

The presenting parental complaint is prolonged unexplained crying, usually beginning within the first 5 weeks of an infant's life. While the colicky infant may be fussy throughout the day, a peak period of crying often occurs in the late afternoon or in the evening. The crying of an infant with colic is described as loud, high pitched and piercing and it may last for hours at a time. The infants crying may be accompanied by tensing of the abdominal muscles, flexing of the legs, lifting of the head, redness of the face and the passing of gas. Other symptoms can include an irregular sleeping pattern or difficulty with feeding. The symptoms of colic usually



resolve themselves when an infant is 3-4 months old.

Prevalence and aetiology

Colic affects 10-30% of infants throughout the world (Pineyard, 1992; Weisbult, 1994) and occurs equally in male and female infants (Dixon, 1992).

Gastrointestinal disorders such as carbohydrate malabsorption are among the most widely postulated causes of colic. Mothers often describe their colicky infants as having rumbling tummies and excessive flatus. Mullen and Barr (1991) explored the issue of lactose and other carbohydrate malabsorption with subsequent gas production in neonates. They postulated that the anaerobic fermentation of unabsorbed carbohydrate results in the production of gases such as carbon dioxide and hydrogen. Other researchers have reported an increased amount of breath hydrogen gas in infants with colic as compared with infants without colic (Moore et al, 1988; Miller et al, 1989).

Breast-feeding

Colic occurs equally in breast-fed and formula-fed babies (Adamson and Davidson, 1987). The discontinuation of breast-feeding should not be recommended because weaning a colicky infant onto a formula can result in a worsening of the symptoms (Laurence, 1989). Jakobsson and Lindbert (1985) found that the symptoms of colic improved when cow's milk was removed from the mother's diet. Therefore the mother might be advised to avoid all cow's milk protein for a trial of a week or two.

Formula feeding

There are many types of formula available but changing from one to the other rarely makes any difference. There are also 'elemental formulas' available which contain completely

hydrolysed protein and various amino acids. However, there is no substantial evidence to support the benefit of any specific formula.

Allergy to cows milk protein, probably the most common food allergy encountered during infancy, has an estimated prevalence of only 1–3% in bottle-fed infants. This uncommon diagnosis is more likely when an infant demonstrates not only prolonged crying but also persistent diarrhoea and/or positive fecal occult blood. While changing to a soy formula may be beneficial in a few selected cases, 25% of infants with an allergy to cows milk protein are also allergic to soy formulas or can become allergic to these formulas. The misdiagnosis of food allergy and the food allergy itself can both be dangerous. The use of unsupervised dietary restrictions during childhood can result in malnutrition and diets can be both expensive and handicapping.

Medication

In the past colic was treated with dicyclomine (Bentyl), however, it is no longer used because of side effects, which include respiratory depression, coma and death (Pineyard, 1992). Gripe water has also been used. Simethicone drops, a non-absorbed antiflatulent with no systemic side-effects, are widely used for the treatment of colic. However, Metcalf (1994) failed to demonstrate a benefit of Simethicone as compared with a placebo.

Transient lactose intolerance

The disaccharide lactose is the chief carbohydrate in human milk and most formula feeds. The new-born small intestine is fully operational to digest lactose immediately after birth. Most problems related to lactose intolerance occur during infancy and reflect the high content of lactose in a normal infant's diet. Quite simply lactose intolerance is the inability of the body to digest the lactose. The body produces an enzyme, lactase, to break this down into glucose and galactose so that it can be absorbed. If baby isn't yet producing sufficient lactase then colic can result.

Diagnosis

The sensitive hydrogen test has superseded the traditional lactose challenge test.



Hydrogen is the main gas produced by colonic bacteria after metabolising the non-absorbed lactose. Most of the gas is passed per rectum but a portion of the gas produced is absorbed and exhaled.

This expired fraction of colonic hydrogen production reliably reflects the quantity of lactose arriving in the colon (Levitt, 1969).

Colic and lactose intolerance

There is evidence from breath hydrogen testing that transient lactose intolerance is a common finding in early infancy (Barr et al, 1984). The time pattern of breath hydrogen secretion in early infancy follows the crying curve of infants with colic (Barr, 1990). Infants with colic have higher breath hydrogen than controls (Miller, 1989). Colic is found with a similar frequency in both breast and bottle fed babies (Thomas et al, 1987).

Lactase enzyme has been shown by measuring milk osmolality to be effective when incubated with formula feeds. A study of bottle fed babies whose milk formula was incubated with lactase or placebo showed reduced crying time in babies whose milk was incubated with lactase (Malone et al, 1995). This study was published in the *Journal of Human Nutrition and Dietetics* 1998 by Prof. Keamey et al.

Colief: a natural approach to colic

A new product has recently appeared on the market called Colief. This product contains

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lactase enzyme in a glycerol and water solution and was developed and researched initially in response to the theory that lactose intolerance is the most likely cause of excessive colonic gas (Barr et al, 1984). There was anecdotal evidence to suggest that babies whose milk formula had been incubated with lactase tended to settle, thus suggesting that lactose intolerance may be a factor in babies with colic. The drops can be used at every feed until this form of transient lactose intolerance passes. In most cases this happens as the digestive tract matures in the first few months of life.

Colief Infant Drops

When added to a baby's usual milk (breast or bottle), Colief Infant Drops break down the lactose (present in milk and milk products) into the simple sugars glucose and galactose making the feed more easily digestible.

Colief Infant Drops should be added to the baby's usual milk, which is then refrigerated for a minimum of 4 hours and a maximum of 12 hours to allow the drops to work.

The bottle can then be warmed and used as usual. As Colief Infant Drops are completely natural, they are suitable for use from birth onwards. Colief Infant Drops are available without prescription from pharmacists and full instructions for use are given. Breast-feeding mothers just need to express two teaspoons of breast milk into a sterilized container add 4 drops of Colief Infant Drops, feed back to the baby using a sterilized plastic spoon and start breast-feeding immediately. For help and advice mothers can call the Colief Infant Drops Helpline on 0800 0281187.

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