admission of failure, there is a definite psychologic advantage in change. The use of skimmed, powdered, evaporated, protein, or acidified milk is also occasionally helpful in colic.

During the neonatal period, the experienced pediatrician can often recognize the characteristics in an apprehensive mother that will result in a colicky baby. Family tension is undoubtedly a fairly common cause, and conversely may likewise be a result. The added financial burden of a child, the distaste of an undesired pregnancy, the prospect of sharing a husband’s affection, or a feeling of inadequacy produced sometimes by interfering relatives or a dictatorial nurse, may all contribute to the tension.

**TREATMENT**

Many doctors reserve the use of drugs for the most severe colic but they may be beneficial in any patient. Paregoric is excellent for the baby with infrequent attacks if the dose is adequate. At least 1 drop per pound of body weight should be given and repeated in 8 to 12 hours if necessary. Whisky or antihistamine drugs in small doses may give relief. Antispasmodic drugs combined with phenobarbital, given regularly before each feeding, provide the best relief if used over a period of time, and have no apparent deleterious effects. The use of tranquilizing drugs such as the rauwolfia derivatives has been reported successful. The best mechanical aid in treating colic is a pacifier. It serves its purpose by providing additional sucking gratification and relaxation, especially in the well-nourished infant who apparently does not need extra food. An enema may occasionally be helpful in a particularly trying episode.

Until an exact cause can be found, the treatment of the unhappy family is of utmost importance. The pediatrician must give them adequate time and sympathetic understanding. Despite the fact that treatment does not always meet with success, the doctor’s interest and strength will serve well to help the parents and baby through this trying experience.

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**EXPERIMENTAL STUDIES OF ALLERGIC COLIC**

*By Joseph H. Fries, M.D.*

The purpose of this presentation is to discuss true allergic colic—as differentiated from the many other forms of colic. An allergic etiology probably accounts for only a small fraction of the colic seen in infancy. Nevertheless, it is worth emphasis because it is in this field that one can present objective evidence.

It used to be generally assumed that “infantile colic” implied only a spastic disturbance of the small intestine. In the light of present understanding, this spastic phenomenon may involve not only the small intestine, but also the colon, and even the pylorus of the stomach.
pain, varying from mild to severe. Many of these children had confirmatory positive cutaneous tests to the provocative foods. Although these observations were made on children 4 to 14 years of age, there is no reason to doubt that similar mechanisms are operative in infants. Obviously infants are not suitable subjects for such studies.

A patient who demonstrated all the classical characteristics of true intestinal colic was an 8-year-old girl suffering severe abdominal pain regularly following ingestion of egg. Cutaneous tests to egg were positive (a markedly positive reaction resulted from testing with 0.01 mg. N per ml.). Following a control gastrointestinal series of roentgenograms which were essentially normal, 2 teaspoonsful of egg added to a barium meal produced, after 1 hour, recurrent episodes of agonizing cramping pain, causing her to “double up” and gradually subsiding after 1 hour. Serial roentgenograms showed that these bouts of pain were associated with intense segmental constriction of the small intestine.

In an attempt to activate the colon in such studies of atopic children, specific allergenic foods contained in a suspension of barium sulphate were introduced as an enema. Combined fluoroscopic and roentgenographic examination revealed localized spasms, i.e., contracture or narrowing of the transverse or descending colon, while the patient complained concurrently of severe abdominal pain. As a control, an enema of barium sulphate in water had been introduced 1 week previously without ensuing symptoms or roentgenographic alterations.

Localization of cramp-like pain varied in different individuals, most often reference was to the mid-abdomen. In these studies, the addition of the provocative food was made without the knowledge of the patient so as to avoid psychic factors.

These observations demonstrate that allergic abdominal pain can be: 1) “colicky” in nature; 2) mediated by a specific allergenic food, and 3) variable in the exact localization in the gastrointestinal tract according to the individual. The portion of the alimentary tract involved in the reaction determines the locality of the abdominal pain; and the degree of the reactivity determines the intensity and other characteristics.

THE PATTERN OF ALLERGIC COLIC

Allergic colic of infants mimics the pattern of classical infantile allergic eczema in periodicity and in spontaneous development and disappearance.

Usually allergic colic appears during early infancy, requiring on the average about 3 weeks for sensitization to take place; duration may be of several months, often 3 months as for other types of colic. Subsequent disappearance may be due to spontaneous desensitization to foods, which are the common excitants, or to loss of allergic reactivity of the gastrointestinal tract.

Many a child with atopic eczema and severe intestinal colic loses the colic first, the eczema later, and subsequently develops allergy to inhalants, the respiratory tract becoming the shock organ. Furthermore, in studies of asthmatic children, one frequently elicits a past history of severe colic in infancy. For these reasons, it may be suggested that this type of disturbance be appropriately designated as “infantile allergic colic,” (making a parallel with “infantile allergic eczema”).

On a different theme, production of colic following ingestion of a food, and avoidance of colic following its elimination, incriminate the food but do not necessarily establish its allergenicity. Foods are complex materials, having physical and chemical (medicinal) properties and even unusual pharmacologic actions. As a reminder, the severe cramping and diarrhea induced in some individuals following ingestion of a laxative substance like prune juice is not necessarily indicative of an allergy. Further confirmation of allergic sensitivity is needed from positive cutaneous tests, roentgenograms or by the coexistence of allergic symptoms. Otherwise, such untoward reactions are more accurately considered as “intolerance.”
It is commonly understood that in most instances positive cutaneous tests are not obtained; possibly because this reaction is mediated by agents of hypersensitiveness wherein antibodies other than the skin sensitizing atopic reagins are operative—such as precipitins.

Even when a specific reagin to a food exists, a positive reaction may not be elicited with the strength of extract usual in testing. On some occasions, positive reactions occurred when stronger concentrations of extracts were used.

SYMPTOMATIC TREATMENT

It was suggested that each panelist give his favorite prescription for treatment of colic in infants. The prescription which I prefer contains elixir of amphetamine sulfate (1 mg./ml.) and elixir of phenobarbital (15 mg./ml.), equal parts. Ordinarily equal parts are used, but when more sedation is desirable, one may prescribe 1 part of elixir of amphetamine to 2 parts of elixir of phenobarbital. The dosage, which is governed by the effect, is 1 to 4 ml. every 4 hours, as necessary. This medication is best administered by medicine dropper directly under the tongue, which favors rapid effective absorption. This combination appears to be equally effective for colic of allergic etiology and for colic mediated by other mechanisms.

ALLERGIC COLIC IN INFANTS IN THE GENERAL PRACTICE OF PEDIATRICS

By Frederick J. Martin, M.D.

Gastrointestinal allergy has been said to be a rare cause of colic in infancy. We had been impressed by the family history of allergy elicited in many cases. Frequent occurrence in colicky babies of stools containing mucus, eosinophils, and sometimes blood, was also noted. The Nance method of staining stool mucus for eosinophils was used. A point was made of inquiring concerning hay fever, allergic asthma, perennial allergic rhinitis, atopic dermatitis, frequent and severe sinusitis and migraine headache, in the mother, father, siblings, grandparents, uncles, aunts and first cousins. This has been done in the case of all newborns.

The following data were accumulated from newborns whom we treated throughout the course of their complaint.

We found 367 colicky infants among 611 who came from allergic families, an incidence of 60.1 per cent; among 296 infants from non-allergic families, 74 had colic, an incidence of 25 per cent. Where the father and mother both suffered from major manifestations of allergy, out of 55 infants, 43 had colic, an incidence of 78.2 per cent.

A total of 814 infants had 308 colicky babies among them, an incidence of 36.1 per cent in our practice. These data were gathered because we could find none in the literature answering the basic question of the incidence of colic in private pediatric practice. A broad cross-section of social classes and nationalities found in a metropolitan area were included. The over-all incidence of 36.1 per cent was a surprise to us. The incidence of 60.1 per cent of colic found in allergic families was impressive. Also, the incidence of 78.2 per cent of colic found in families where both mother and father displayed major allergies seemed to confirm our impression that allergy plays a large role in colic in infancy. It can also be seen that a considerable number of families without allergic histories contain colicky infants. This finding coincides with our failure to abolish colic in our practice by placing colicky infants on hypo-allergic diets. We experienced such failures, of course, even with infants from allergic families.

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EXPERIMENTAL STUDIES OF ALLERGIC COLIC

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