MILK ALLERGY IN ELEMENTARY SCHOOL CHILDREN

A PRELIMINARY REPORT

BY

D. A. WILLIAMS, B.Sc., M.B., B.Ch.

DEPUTY MEDICAL SUPERINTENDENT, LLANDOUGH HOSPITAL, CARDIFF

Milk is recognized as one of the commonest foods responsible for allergic manifestations, and it has been suggested in a recent paper¹ that "the widespread drinking of milk by school children and others may yet have to be considered in the light of food allergy." Its ingestion by susceptible people may be followed by nausea, vomiting, abdominal pain, diarrhoea, headache of the migrainous type, asthma, eczema, urticaria, or nasal catarrh. The degree of sensitivity, however, varies considerably. Some people are unable to tolerate the smallest quantity—even the taking of butter may induce a severe reaction. In others, symptoms may only follow the repeated ingestion of fresh milk—suggesting cumulative effect. Again, boiled or condensed milk may be tolerated by some who cannot take fresh milk.

Although specific sensitivity to any food—particularly milk—may be occasionally inherited, it is more usual for the allergic diathesis to be hereditary. That is to say, descendants inherit a constitutional make-up which predisposes them to the development of sensitivities, and so may exhibit reactions to any allergic agent with which they come into adequate contact at any time from birth onwards. It has been suggested that sensitivity to milk in children who have inherited the allergic diathesis may be developed as the result of excessive drinking of milk by the mother during pregnancy or the nursing period, by over-feeding the child with milk, or by giving it in too concentrated form in artificial feeding.

While investigating cases of food allergy in adults under the care of Professor A. M. Kennedy at Llandough Hospital, it was noted that some patients, particularly those suffering from gastro-intestinal disturbances, often of their own accord refrained from taking milk. On being questioned they would state that they disliked it, or that "it never seemed to suit them." Further inquiry would elicit a family or personal history of allergy, and on using a trial dietary definite sensitivity to milk would be proved. It was then obvious that these people had good reason, whether conscious of it or not, for their dislike of milk—they were allergic to it. It is a matter for speculation whether their inherent dislike might not be considered a subconscious protective mechanism.

Scope and Method of Investigation

Bearing this in mind it occurred to us that a study of those elementary school children who had refused or shown a disinclination to take the milk supplied at school might reveal an allergic foundation for their attitude. Dr. Greenwood Wilson, the medical officer of health and school medical officer for Cardiff, kindly assisted us by sending a circular letter to the head teachers of all the elementary schools in his area requesting the names and addresses of those children who had refused or were rather averse to taking the milk supplied, and making arrangements for us to examine them in Cardiff. Only 150 of them, however, have been examined to date, but the results obtained in this group would appear to be sufficiently instructive to warrant publication of a preliminary report.

Each child was examined personally and the parent or guardian cross-questioned. Besides finding out why the child refused or disliked milk, we made careful inquiry

into the personal and family history for evidence of allergy and allergic inheritance. Direct questions were asked in regard to eczema, asthma, hay fever, migraine, urticaria, and gastro-intestinal disturbances, and whether any other members of the family disliked or were unable to take milk. The effects produced by the ingestion of milk were carefully inquired into and the age at which symptoms, if any, first appeared was noted.

Results

The 150 cases examined may be classified in accordance with the results obtained as follows.

Group 1a.—Eighty-eight children (58.7 per cent.) refused the milk because its ingestion was always followed by allergic manifestations of some sort. Of these, forty-seven disliked milk because every time they took it, although they did not vomit, they suffered from a feeling of nausea so marked that they would not take milk of their own accord; thirty-seven refused milk because it produced vomiting; two had asthma after it; one had severe abdominal pain; and one developed eczema. In fourteen of the thirty-seven children who vomited there were accompanying migrainous headaches, and in another two the children suffered from fainting attacks. The parents had noticed the definite relation of these fainting attacks to the ingestion of milk, for on withholding the milk the attacks did not recur. In none of the thirty-seven cases could any other cause be discovered to account for the vomiting. In all except one of the eighty-eight cases there was a personal or family history of allergy.

Group 1b.—Thirty-six children (24 per cent.) had no nausea or other symptoms after milk, but disliked it both at home and at school and so did not take it. Some of these children could not remember ever having taken milk, which might explain the absence of symptoms. In all except four there was a personal or family history of allergy.

The age of onset of the symptoms or dislike of milk is shown in the following table:

	Number of Cases.	
	Group 1a.	Group 1b.
Under 18 months	39	24
Over 18 months and under 3 years ...	11	5
Over 3 years and under 5 years ...	21	4
Over 5 years... ..	17	3

Group 2.—Twelve children (8 per cent.) had no symptoms after milk but disliked milk at school only. The reason given in every case was its taste (the school milk is pasteurized). Five children had either a personal or family history of allergy; two of these did not get milk at home, the reason given being poverty, while the other three, two of whom belonged to one family, took it at home without any upset. The remaining seven children took milk freely at home without any ill effect; none had any allergic history. In this group the dislike was, of course, first manifested when the child came to take school milk—that is, when over the age of 5 years.

Group 3.—Fourteen children (9.3 per cent.) refused milk at school for various reasons unconnected with their health. The parents thought them "big enough without it," "it interfered with the midday meal," "well enough without it," or the parents had not troubled to take advantage of the scheme, or did not wish to do so. None of these children disliked milk, and all took it at home without ill effect. Only two came of allergic stock: one had a family history only, the other a personal and family history.

Remarks

Considering at the outset the fifteen cases in Group 3, it is obvious that the refusal of milk was in no way associated with symptoms of any sort. The children were, for all practical purposes, average healthy individuals. Two came of allergic stock and only one of these was as yet showing allergic symptoms, but not to milk. The dislike of the taste of the school pasteurized milk advanced as an explanation by the twelve children in Group 2 is perhaps understandable, but it is notable

that five of them had an allergic history and two of the latter never had milk at home. Group 1b is interesting. Thirty-two out of the thirty-six belonged to allergic stock, and all disliked and avoided taking milk. Many had no recollection of ever taking it. The definite dislike of milk associated with the allergic family stock in all but four cases and the early age at which it was first manifested in the majority would appear to justify one in ascribing the aversion to milk as an allergic manifestation of a protective nature.

Summary and Conclusions

Investigation has been made of 150 elementary school children who had refused milk at school. Out of these, 124, or 82.7 per cent. (Groups 1a and 1b), appeared to be allergic to milk. They all had symptoms after milk, or a very definite dislike of it, and all except five gave a personal or family history of allergy. Twelve, or 8 per cent. (Group 2), disliked the school milk only on account of its taste (it was pasteurized), but it is significant that five of them came from allergic stock. Fifteen, or 10 per cent. (Group 3), refused the school milk for reasons unconnected with health. It did not disagree with them and apparently they were normal children; only two had allergic histories. Forty normal children taking milk readily without ill effects were examined as a control; only four (10 per cent.) gave a personal or family history of allergy.

Admittedly the numbers investigated to date are small, but the results obtained appear significant. In Cardiff 14,000 of the 32,500 elementary school children take milk at school daily, but why the remaining 18,500 do not is not yet known. The results of our preliminary investigation suggest that allergy to milk may play a not unimportant part. This suggestion appears to gain some support from the replies obtained recently to a circular letter sent out by the school medical officer, London County Council,² asking for the reasons why 85,447 out of 496,542 children had not availed themselves of the opportunity of buying milk at school. The replies showed that 35 per cent. had a distaste for milk, 2 per cent. disliked cold milk, and 0.5 per cent. did not take it on account of vomiting or because the doctor stopped them. In view of our findings it seems more than a probability that the 35.5 per cent. have an allergic diathesis and very good reason for refusing the milk.

While the popular movement to encourage the widespread consumption of milk has much to commend it, the fact that all people cannot take it with impunity should be remembered. Those who are allergic to it must avoid it or suffer. The refusal or disinclination of many children to take milk at school should be given due consideration. Their attitude is probably protective in nature to prevent them suffering allergic reactions, and possibly, also, to give them time to develop a gradual immunity to milk. It is known that desensitization to milk, as to other foods, not infrequently occurs as a result of its omission from the diet over a lengthened period, and the degree of tolerance often varies with the interval. Thus milk should not be forced on these children, but rather withheld.

It is with pleasure that I acknowledge my indebtedness to Professor A. M. Kennedy, Director of the Medical Unit, Welsh National School of Medicine, for advice and guidance in this investigation, and to Dr. J. Greenwood Wilson, medical officer of health and school medical officer of Cardiff, and Dr. D. G. Morgan, Medical Superintendent of Llandough Hospital, Cardiff, for their help and encouragement.

REFERENCES

- ¹ Kennedy, A. M.: *British Medical Journal*, 1936, i, 869.
- ² Annual Report of the School Medical Officer, London County Council, 1934, p. 59.

Clinical Memoranda

Unusual Case of Infection with *Corynebacterium Diphtheriae*

Although diphtheritic infection of members of the medical and nursing staffs of infectious diseases hospitals is not rare, there are unusual features about this case which probably make it worth recording. Furthermore, it is a personal case, as I myself was the patient, so I am able to guarantee the accuracy of the symptoms.

CASE RECORD

It happened in January, 1929, when I had been superintendent of the City (Fever) Hospital, Capetown, for about eighteen months. I had been in close daily contact with diphtheria patients since my appointment, and was frequently called in to perform the operation of tracheotomy. Night calls were common, and as I had no resident assistant I was somewhat overworked, mildly "run down," and suffering from a slight unilateral conjunctivitis. A day or two after doing a tracheotomy I noticed a small, rather tender vesicle on the index finger of my left hand, and surmised that I had nicked it with the knife while operating. It was obviously slightly infected, and in the course of the next few days a small pustule formed and burst. The lesion was sluggish and did not clear up, but the pustule kept on discharging. I took little notice of the condition, and it caused me little or no real inconvenience. About ten days after the tracheotomy I spent an afternoon fishing and bathing in the warm waters of False Bay. When I returned home I seemed to have a mild cold in the head and felt rather tired and distinctly depressed. Next morning when I awoke I still had the sensation of mild catarrh, and on blowing my nose I was surprised to find a piece of membrane about the size of a postage stamp in my handkerchief.

I was rather at a loss as to what I should do, and decided to take further steps if more membrane appeared. I did my ward round, and shortly before lunch time I again blew my nose and found membrane in my handkerchief. I put the piece of membrane into a test tube and decided to show it to the Union Government pathologist on my way to the tuberculosis clinic. As my throat was mildly uncomfortable—it was never sore at any stage—I examined it in a mirror and thought I saw a strip of membrane on my right posterior pillar. The Government pathologist kindly examined my throat that afternoon, but as the light was extremely poor he could see nothing. He then made smears from the piece of membrane and took swabs from finger and throat, but was unable to find diphtheria bacilli in the dried smears. Cultures were put up, and I went back to work, spending a busy afternoon at the tuberculosis clinic.

Next morning as I was beginning my ward round the Government pathologist rang me up, and in suspiciously sympathetic tones asked me how I was feeling. I replied that I felt all right, and he proceeded to tell me that the three cultures were positive. I did not feel half so well after I had heard the news. I went off duty and again examined my throat in a mirror, and saw unmistakable membrane on the right posterior pillar.

An intramuscular injection of 40,000 units of diphtheria antitoxin made the throat clear up in a few hours. The small whitlow persisted for a day or two, as did a blood-stained discharge from the left nostril. Convalescence was uneventful and there were no complications. The conjunctivitis, which apparently was non-diphtheritic, persisted for two or three weeks, but was at last cured by using Mulford's No. 18 ointment at the recommendation of an ophthalmic surgeon.

COMMENTARY

The interesting points of the case are: (a) the rather unusual path of infection—that is, from finger to nose and then to throat; (b) the absence of severe toxæmia