

THE INCIDENCE OF ALLERGIC DISEASES IN A PEDIATRIC PRACTICE IN TURKEY *

Kemâl Özkaragöz, M. D.,** Aysel Pınar, M. D.,*** and
Fethi Karadeli, M. D.***

Introduction

There have been many surveys made relating to the incidence of allergy in various countries.¹⁻⁷ At the present time, over-all surveys suggest, and it is generally accepted, that the incidence of major allergies is between 10 and 15 per cent. The first such surveys were limited to reports of individual cases, without a clearcut definition of the allergy presented.

Few allergy surveys have been made exclusively on a pediatric population. The first such survey was carried out by London,⁸ in 1937. He found allergic diseases in 6.6 per cent of 1,500 children seen consecutively in his practice. Crook, et al,⁹ in 1958, published a paper concerning the incidence of allergy in a general pediatric practice. They included 1,225 children, 175 (14.3 per cent) of whom were allergic. Five hundred and forty - five (45 per cent) were nonallergic. Only children with unquestionable major allergies, such as eczema, asthma, hay fever, and allergic rhinitis, were classified as allergic. Rapaport¹⁰ made a pilot study of 2,169 children, obtaining the data from parents in individual and group interviews and questionnaires. Of this group, 19.5 per cent had suffered from a major allergy. Appel, et al,¹¹ made a pediatric survey on the incidence of allergy in a population of 16,575 children in the northwestern part of the United States and one city in Canada. Of this group, 3,075 children (18.6 per cent) were found to have experienced symptoms of a major allergic syndrome (infantile dermatitis, seasonal pollinosis, perennial allergic rhinitis, or bronchial asthma) at one time or another in their lives.

Dees,¹² in 1957, reported on the asthmatic children among all the first visits or admissions to the pediatric clinic of the Duke University

* From Ankara University Hacettepe Faculty of Medicine and Hacettepe Children's Hospital.

** Chief, Allergy Department.

*** Assistant in Pediatrics.

hospital. Among 2,951 children she found 274 (9.3 per cent) asthmatics.

There have also been many allergy surveys made in European countries. In Great Britain, at the University of Wales, it was found that of 1,198 students, 3.1 per cent gave a history of asthma.¹³ Grant,¹⁴ in 1957, in a medical survey of 4,571 students at this same university, found that 3.3 per cent gave a history of asthma and 1.9 per cent were still having attacks. It would appear that roughly two per cent of the university students in Britain have active asthma and between three and four per cent give a history of asthma.

In Finland, Eriksson - Iihl,¹⁵ in 1955, found from the school records at Helsinki that 0.7 per cent of 27,999 school children suffered from asthma. She also cites the work of Peltonen and his colleagues who found the incidence of asthma, among a group of 4,832, seven to fourteen year old school children, to be 0.6 per cent. In Sweden, Kraepelin¹⁶ in 1954, found the prevalence of asthma among school children aged seven to fourteen years to be 0.7 per cent.

Many of these studies were made in an attempt to estimate the present incidence of major allergies by random samplings of the pediatric or general population. The figures indicate the incidence of hay fever in Europe to be about 0.5 per cent. In the United States, however, hay fever includes a sensitivity to ragweed, a pollen which does not exist in Europe or Turkey. Because of this, the incidence of hay fever in the United States is much higher : between three and ten per cent report a past or present history of hay fever. On the other hand, in South America, Lima¹⁷ reports that there is no true case of hay fever among native Brazilians.

Although the total number of major allergies seems to be similar in many countries, the incidence of individual allergic syndromes is quite different. A wide variety of factors are believed to play an important part in the etiology and natural history of allergy: climate, environment, social and economic conditions, patterns of living, racial characteristics, sex, and age.

In order to make a meaningful prevalence study, an exact definition of allergy is necessary. In addition, it is important to include inactive as well as active allergic diseases, to note the age and sex distribution of the population, and the dates of the study. In order to make our data comparable with the pediatric surveys cited above, we limited our study to the following major allergic syndromes:

1. infantile dermatitis (eczema to the age of two); 2. seasonal and perennial rhinitis; 3. bronchial asthma. The following manifestations of allergic diseases were not included: urticaria, angio-edema, recurrent upper respiratory infection, food allergy, physical allergy and insect allergy.

Method of Study

Our study was made during the year 1961. Since it was impossible to include all the patients who came to Hacettepe Children's Hospital, the dates for study were selected at random during the year. The group studied was composed of every third patient who came to the general pediatric out-patient department for treatment. The patients seen in special clinic on the selected dates were not included in the survey. A total of 1,096 patients was selected during the 105 non-consecutive days on which the study was made. The chart of each child seen for the study was reviewed carefully in relation to family history, individual medical history, type of complaints, interval notes, physical and laboratory findings, and response to treatment. Only those children with clear, unquestionable allergic disorders were considered allergic for the purposes of the study. Additional data were gathered using the allergic index devised by Rapaport.¹⁸ This allergic index represents a weighted mathematical sum of all recognizable manifestations of the allergic mechanism, calculated in such a manner as to indicate a prognosis of allergy in any individual case. Each factor is assigned a numerical value, based on its significance in the total allergic picture. When the patient's clinical history yields an allergic index of five or more units, an allergic condition is diagnosed. This index serves to verify the diagnosis of an allergic tendency and to focus the attention of the physician on the many significant signs of allergy which might otherwise go unnoticed.

Discussion

One hundred and seventeen (10.6 per cent) of our 1,096 children were found to be allergic. These children included those with infantile eczema and those with typical bronchial asthma which was completely relieved by adrenalin. Children with seasonal hay fever and perennial rhinitis were included whether or not a confirmatory positive nasal smear for eosinophils was obtained. Analysis of the types and incidence of allergic disorders found in these 117 children is given in table 1.

TABLE 1
TYPES AND INCIDENCE OF ALLERGIC DISORDERS

Syndrome 137	Number of patients	Per cent of aller- gic syndrome among entire group	Per cent of spe- cific allergic syn- drome among to- tal number of syndromes
Asthma	48	4.3	35.0
Eczema	26	2.4	18.9
PAR	62	5.6	45.2
Hay fever	2	0.18	1.4

Among the 117 patients, 137 allergic disorders were diagnosed. Only 37 of our patients had one allergic disease, and 80 had two allergic syndromes. This can be seen in table 2.

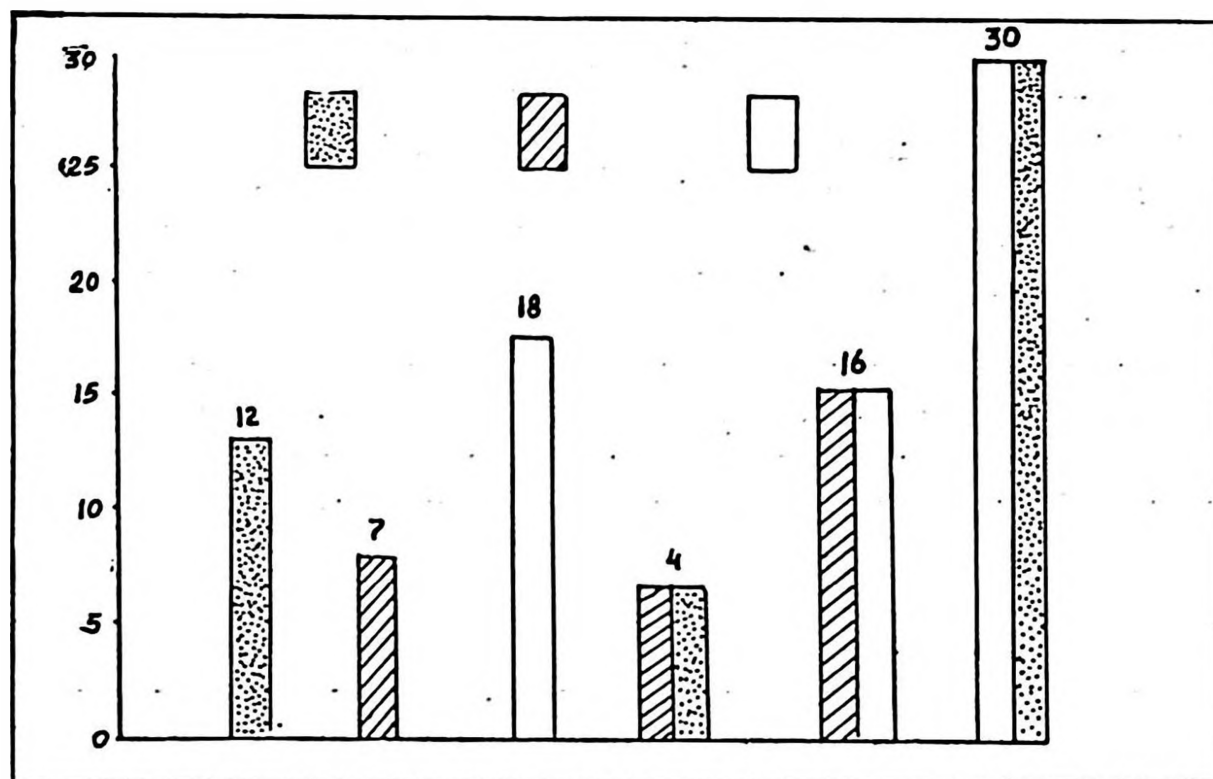
TABLE 2
A COMPARISON OF THE INCIDENCE OF ALLERGIC SYNDROME

CASES

Asthma

Eczema

PAR



A comparison of the incidence of certain allergic syndromes in our group of 117 patients with the findings of Glaser, Clein and Crook is of interest. Twenty-two per cent (26) of our children had eczema. This figure is quite low compared to Glaser's figure of 38.6 per cent, and Crook's figure of 34 per cent. Multiple allergies occurred

in 68 per cent (80) of our patients. Again, this is somewhat lower than Glaser's finding of 79 per cent, and Crook's of 77 per cent. Comparing the incidence of respiratory allergies, we noted them in 67.5 per cent of our cases, whereas Glaser's study revealed a considerably higher incidence: 80 per cent. Only 1.7 per cent, or two, of our 18 allergic rhinitis cases had seasonal hay fever. All the other surveys report a lower incidence, except for the United States, where, as mentioned earlier, there is a special situation because of ragweed sensitivity.

Our method of study was similar to that of Crook and his colleagues, in that we also used a group of children selected from a sick population.

One hundred and seventeen (10.6 per cent) allergic children out of 1,096 patients is not an insignificant number. If other minor and major allergies had been included, the percentage would have been even higher. The fairly close agreement of our figure with that of 15 to 30 per cent reported in the over-all surveys, leads us to agree with Rowe, who noted twenty years ago that, «allergy next to infection, is probably the most important single etiological agent in human symptomatology.»³

The age distribution of the onset of major allergies among our 1,096 cases is shown in tables 3 and 4. According to Clein,¹⁹ 95 per cent of allergic children manifest some evidence of allergy before the age of four years. In our group, 79 per cent of the asthma patients had symptoms before the age of five years. There were, however, no cases of hay fever prior to the age of five years, and most of the cases of perennial allergic rhinitis were recognized as such between the ages of five and ten years.

TABLE 3

THE AGE OF ONSET OF ALLERGIC SYNDROMES AMONG 1,096 CHILDREN

Age in years	Number of children	Number of allergic patients	Per cent among total age group
0 — 2	466	44	9.8
2 — 5	346	46	13.3
6 — 10	193	21	10.8
10 — 15	91	6	6.6

TABLE 4
AGE DISTRIBUTION OF ONSET OF SPECIFIC ALLERGIC SYNDROMES

Allergic Syndrome	AGES			
	0 - 2	2 - 5	5 - 10	10 - 15
Asthma	11	27	4	6
Eczema	20	5	—	—
PAR	15	30	15	2
Hay fever	—	—	1	1

How many of these allergic reactions are simply ignored, or treated symptomatically, is open to question. However, even in this age of enlightened medical care, it is highly probable that a good many allergies are unrecognized or unheeded. Many allergists feel that a significant number of allergies are not diagnosed correctly or treated adequately.

The first evidence of allergy in the neonatal period is usually colic or some other type of gastrointestinal disturbance, such as spitting up, excessive gas, and a tendency to mucous in the stools. Gastrointestinal symptoms gradually subside about the age of six months, and are followed by a period of frequent colds. Towards the end of the first year, the colds may be associated with wheezing in the chest.

Some allergic infants also develop a mild skin rash which appears intermittently. The skin lesions may vary from chapping to heavily oozing, crusted lesions. Over 70 per cent of this kind of allergic reaction subsides before the age of two years. It is also quite common for skin allergies to change to respiratory allergies. When this kind of allergy develops, the child may start to have recurrent respiratory infections. These children are candidates for bronchial asthma in the future. Furthermore, these frequent infections often lead to continuous «stuffy nose» complaints, and colds, with or without fever. The characteristic mannerism of nose wrinkling, the so-called «allergic salute», is an attempt to relieve nasal congestion or obstruction.

Perennial allergic rhinitis was quite common in our group, but we rarely found true seasonal pollinosis. The two cases of hay fever need to be followed to see whether or not they will develop further

seasonal allergy and asthma. According to Vander Veer,²⁰ 30 per cent of the untreated hay fever patients develop asthma. The chronic, persistent, non-productive nocturnal cough which is not accompanied by a nasal or paranasal sinus infection must also be considered a pre-asthmatic symptom. Repeated bronchitis in an allergic child must also be closely watched, as this will eventually become manifest bronchial asthma.

Summary

An investigation of the incidence of allergy among 1,096 pediatric patients seen at Hacettepe Children's Hospital is presented. The patients were selected on a random basis, and represent about one-third of those brought to the clinic for treatment, or one - twentieth of the children treated all year. The presence or absence of allergic diseases was determined by the patient's record, family history, physical examination, laboratory findings, response to treatment, and Rapaport's allergic index technique. In this group of 1,096 children, 117 had one or more allergic syndromes. Only children with unquestionable major allergies were included in the study.

The group is analyzed according to the type and incidence of allergy, and the age of onset of the allergic symptoms.

This study is a pilot project undertaken at Hacettepe Medical Center, and further investigation into the incidence of allergic diseases in Turkey is being carried out.

REFERENCES

1. Frankel, L. H., and Dublin, L. I.: *Sickness survey of principal cities in Pennsylvania and West Virginia*, New York, Metropolitan Life Insurance Company, 1917.
2. Vaughan, W. T., and Black, J. H.: *Practice of Allergy*, London, Henry Kimpton, 1954.
3. Rowe, A. H.: *Clinical Allergy: Manifestation, Diagnosis and Treatment*, Philadelphia, Lea and Febiger, 1937.
4. Claussen, O.: Asthma in Norway, *Nord. Med.* 37: 525, 1948.
5. Schwartz, M.: Heredity in bronchial asthma, *Acta allergol* 5: Supp. 2, 1952.
6. Albrecht, von J., and Dwersteg, E.: Vorkommen und verteilung von asthma bronchiale in Sudhessen im jahre 1953, *Allergie and Asthma* 3: 1, 1957.

7. Kessler, A. : Hay asthma and hay fever in Israel, *Med. J. Kupath. cholim* 13: 127, 1954.
8. London, A. H. Jr. : The composition of an average pediatric practice, *J. Pediat.* 10: 762, 1937.
9. Crook, W. C., Harrison, W. W., and Crawford, S. E.: The incidence of allergic diseases in the general practice of pediatrics, *J. Pediat.* 52 : 20, 1958.
10. Rapaport, H. G., Appel, S. J., and Szanton, V. L. : Incidence of allergy in a pediatric population, *Ann. Allergy* 18 : 45, 1960.
11. Appel, S. J., Szanton, V. L., and Rapaport, H. G. : Survey of allergy in a pediatric population, *Penn. Med. J.* 64 : 621, 1961.
12. Dees, S. C. : The asthmatic child, *Am. J. Dis. Child.* 93 : 228, 1957.
13. Williams, D. A. : Social importance of allergic diseases, *Proc. First International Congress for Allergy*, Karger, Basel, 1952.
14. Grant, G. : Asthma among undergraduates at the University of Wales, *Acta allergol* 11 : 37, 1957.
15. Eriksson-lihr, Z. : Special features in allergy in children, *Acta allergol* 8 : 289, 1955.
16. Kraepelin, S. : The frequency of bronchial asthma in Swedish school children, *Acta Paediatrica* 43 : Supp. 100 : 149, 1954.
17. Lima, A., Oliveira, Costa, O. D., da Galeno, R., and Santos, P. R.: Dos polinosis in Brazil, *Ann. Allergy* 4 : 13, 1946.
18. Rapaport, H. G., and Adler, D. K. : The allergic index, *Ann. Allergy* 18 : 179, 1960.
19. Clein, N. W. : Allergy in infants : the first allergic manifestations, *J. Allergy* 10 : 253, 1939.
20. Van der Veer, A., and Cooke, R. A. : Allergy in Theory and Practice, Philadelphia, Saunders. 1947, p. 183.