Seasonal distribution of Henoch-Schönlein purpura

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Atkinson, S. R. and Barker, D. J. P. (1976). *British Journal of Preventive and Social Medicine*, 30, 22-25. **The seasonal distribution of Henoch-Schönlein purpura.** A review of 76 Southampton children with Henoch-Schönlein purpura has confirmed that there is no evidence of a streptococcal aetiology in the majority of cases of this disease. Among these patients the frequency of preceding respiratory infection of all kinds was only 7% greater than that in controls. Data on month of admission in four areas of England and Scotland show that the incidence of the disease is lowest in the June-August period. Contrary to previous findings there is no marked peak of incidence in any single month.

The cause of Henoch-Schönlein purpura is unknown. A minority of cases may be attributed to allergy to food or drugs, as has been shown by the reappearance of purpura on administration of the suspected substances. It has been suggested that the disease usually develops as a reaction to pharyngitis or tonsillitis caused by the Group A β -haemolytic streptococcus. Henoch-Schönlein purpura would, therefore, have an aetiology similar to that of rheumatic fever, although its occurrence is rarely associated with either rheumatic fever or scarlet fever. Several authors have suggested that preceding respiratory tract infections, not specifically streptococcal in origin, may be important as an aetiological factor (Vernier *et al.*, 1961).

In the absence of specific tests which could indicate that a patient has developed hypersensitivity to bacteria or viruses, epidemiological studies offer an alternative method of implicating such hypersensitivity in the aetiology of Henoch-Schönlein purpura. In this paper is described a study of the epidemiological evidence which would associate the disease with antecedent streptococcal throat infection or other respiratory tract infection.

METHOD

Records of all children diagnosed as having Henoch-Schönlein purpura during 1963-72 were obtained from the Southampton Children's Hospital. This hospital is the only paediatric centre in

Southampton and it also serves the surrounding part of Hampshire. A recorded diagnosis of Henoch-Schönlein purpura was accepted when the characteristic skin rash was described together with either joint disorders (periarticular pain, tenderness, or swelling) or gastrointestinal disorders (abdominal pain, haematemesis, or melaena). In one case the rash was absent, but both joint and gastrointestinal disorders were present.

RESULTS

Altogether 82 children were recorded as having Henoch-Schönlein purpura during the 10-year period. For six of these, the recorded data did not meet our criteria for the diagnosis. Of the 76 children remaining, 38 were boys and 38 girls. The age range was from 7 months to 14 years with a modal age of 5 years (Table I).

The frequency of different symptoms and signs is shown in Table II. As already stated, all but one of the patients had the characteristic skin rash; 68 had joint symptoms and/or signs; 45 had abdominal pain; and 23 had haematuria and/or proteinuria. Other disorders were infrequent.

Either throat or nasal swabs or both were taken from 70 patients and the anti-streptolysin (ASLO) titre was measured in 53. Five (8%) of the nasal swabs and 12 (17%) of the throat swabs grew β -haemolytic streptococci. Of the ASLO titres 14 (26%) were greater than 200 international units per ml. In only 33% of patients in whom one or more of

TABLE I
AGE DISTRIBUTION OF PATIENTS

Age of patient (years)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
No. of patients	1	0	7	10	13	17	11	6	4	4	0	1	0	1	1

TABLE II
FREQUENCY OF SYMPTOMS AND SIGNS IN 76 PATIENTS

Symptom/Sign	No. of patients
Skin rash	75
Joint symptoms/signs	68
Abdominal pain	45
Haematuria/proteinuria	23
Gastrointestinal bleeding	9
Orchitis	2
CNS disorders*	2
Intussusception	1

*One patient had a right-sided fit and the other had generalized convulsions

these investigations was performed was there laboratory evidence of recent streptococcal infection.

The isolation of streptococci from 17% of throat swabs from the patients may be compared with an isolation rate of 9.6% from all throat swabs taken from Southampton children during 1972. In that year there were 146 isolates from 1506 throat swabs taken from children aged 1 to 10 years and sent to the Southampton Public Health Laboratory during routine general and hospital practice.

A total of 66% of the patients were recorded as having had a respiratory tract infection (coryza, cough, otitis media, sore throat) in the month preceding admission, compared with 49% of a control group of 148 children admitted to the Southampton Children's Hospital in 1972-73 (Table III). These control children comprised all patients admitted in February, July, and September who had diseases other than Henoch-Schönlein purpura or a respiratory tract infection, and in whose records the presence or absence of preceding respiratory tract infection was noted. The difficulty of searching through large numbers of hospital records prevented selection of a control group admitted throughout one year, and the three months were selected to reflect the varying rates of respiratory tract infection during the year.

TABLE III
FREQUENCY OF PRECEDING RESPIRATORY TRACT INFECTIONS IN PATIENTS AND CONTROLS

Patients	No. of Patients	Preceding RT Infection	
		No.	%
Henoch-Schönlein purpura patients ..	73*	48	66
All other patients admitted in September 1972 ..	42	18	43
February 1973 ..	36	23	64
July 1973 ..	70	31	44
Total	148	72	49

*Relevant data not recorded for three patients

Standardization to allow for the different age distribution in the Henoch-Schönlein purpura patients and the controls gives frequencies of 55% in patients with preceding respiratory tract infection compared with 48% in controls.

Fig. 1 shows the distribution of the month of onset of symptoms among the 76 Southampton children with Henoch-Schönlein purpura. Numbers for adjoining months have been combined to give six 2-monthly frequencies. There is a peak in frequency in September to October but otherwise little variation throughout the year. Fig. 1 also shows the distribution of the 146 throat swabs which grew β -haemolytic streptococci out of all throat swabs taken from Southampton children during 1972. There is no increase in frequency of β -haemolytic streptococcal isolation in September to October to correspond with the increased frequency of Henoch-Schönlein purpura.

Altogether 65 (86%) of the patients presented at hospital within two weeks of onset of symptoms, and

FIG. 1. Distribution of month of onset of Henoch-Schönlein purpura in Southampton.

the monthly distribution of admission for Henoch-Schönlein purpura will therefore approximate to the monthly distribution of onset of the disease. Data on the monthly distribution of admission for Henoch-Schönlein purpura were obtained from two other areas—Wessex and Oxford. In the Wessex region during 1968-72 there were 171 children aged 12 years and under who were admitted to hospitals other than the Southampton Children's Hospital, and on whose discharge forms a diagnosis of Henoch-Schönlein purpura was recorded (Fig. 2). There is a peak in frequency of admissions in March to April and a trough in July to August.

The Oxford Record Linkage Study records 52 children aged 12 years and under who were admitted with Henoch-Schönlein purpura during 1967-70. The greatest number of admissions occurred in the months from November to February and again the lowest frequency was in July to August (Fig. 2).

Fig. 2. Distribution of month of admission for Henoch-Schönlein purpura among children in the Wessex and Oxford regions.

DISCUSSION

In a study of 19 patients with Henoch-Schönlein purpura Bywaters, Isdale, and Kempton (1957) found that the frequency of ASLO titre elevation and isolation of streptococci from throat swabs was similar to that in control patients suffering from a variety of non-rheumatic illnesses. Among the 76 patients in Southampton, evidence of recent streptococcal infection has been found in only 33% and the isolation rate of streptococci from throat swabs of patients was only 7% higher than that from 1506 throat swabs taken from children during routine hospital and general practice. In Southampton the seasonal pattern of the disease does not correspond with the seasonal pattern of isolation of haemolytic streptococci from throat swabs (Fig. 1). Since children from whom throat swabs are taken are not representative of all children in the Southampton population these data must be interpreted with caution. Likewise the data on

Henoch-Schönlein purpura derived from hospital admissions, and for this usually mild disease admission rates may be influenced by social factors and, therefore, may imperfectly reflect changes in disease incidence. Nevertheless from these findings there is no evidence that streptococcal infection is an aetiological factor in the majority of cases of the disease.

Lewis (1955) recorded the month of admission of 139 cases of Henoch-Schönlein purpura in Edinburgh and Glasgow. Bywaters *et al.* (1957) similarly studied 52 cases in Berkshire and Buckinghamshire. The results of these two studies are shown in Fig. 3. The seasonal distributions from Edinburgh and Glasgow and from Wessex (Fig. 2), which are based on the largest numbers, are similar in showing a peak frequency in March to April. The marked January to February peak in the Berkshire and Buckinghamshire data and the October to November peak in Southampton (Fig. 1) were not found elsewhere. In all areas there was a low frequency in July to August.

Fig. 3. Distribution of month of admission for Henoch-Schönlein purpura in Edinburgh and Glasgow (Lewis, 1955) and Berkshire and Buckinghamshire (Bywaters *et al.*, 1957).

Bywaters (1969) has written that 'there is a greater incidence (of Henoch-Schönlein purpura) in the winter and spring in the British Isles, especially during February'. Table IV shows the sum of the five sets of data from Southampton, Wessex, Oxford, Edinburgh and Glasgow, and Berkshire and Buckinghamshire. This represents the monthly frequency of admission among 490 patients in England and Scotland. There is a period of continuing low frequency from June to August but no marked peak in any single month.

TABLE IV
DISTRIBUTION OF MONTH OF ADMISSION FOR HENOCH-SCHÖNLEIN PURPURA: ALL SURVEYS

	Total No.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Bywaters ..	52	9	14	5	4	3	1	2	1	1	6	2	4
Lewis ..	139	11	7	19	18	6	12	7	4	13	16	14	12
Southampton* ..	76	2	5	9	5	6	3	5	5	11	11	7	7
Oxford ..	52	5	7	6	2	7	2	1	4	2	5	6	5
Wessex ..	171	12	17	23	20	16	13	14	7	8	17	10	14
Total ..	490	39	50	62	49	38	31	29	21	35	55	39	42

*Month of admission, rather than of onset as in Fig. 1

In Britain the return of children to school in September results in an increase in upper respiratory infections (Crofton and Douglas, 1969). The frequency of Henoch-Schönlein purpura does rise in September and October from its low August level and this accords with an association with upper respiratory infection. However, the period of continuing high frequency is in the spring, from February to April.

Altogether 66% of Southampton children with Henoch-Schönlein purpura gave a history of preceding respiratory tract infection. A similar high frequency of respiratory infection was found by Lewis (1955). However, in the present study an age-standardized comparison between patients and controls has shown that the frequency of preceding respiratory infection in patients is only 7% greater than that in the controls.

It may be concluded that, although seasonal variations in incidence of Henoch-Schönlein purpura in Britain are compatible with an infectious aetiology, there is, from this study, no evidence that in the majority of cases the infectious agent is either the haemolytic streptococcus, or any other organism causing symptoms of respiratory disease.

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REFERENCES

- BYWATERS, E. G. L. (1969). *Textbook of the Rheumatic Diseases*, edited by W. S. C. Copeman. Livingstone, Edinburgh.
- , ISDALE, I., and KEMPTON, J. J. (1957). Schönlein-Henoch purpura. Evidence for a Group A β -haemolytic streptococcal aetiology. *Quart. J. Med., N.S.*, **26**, 161
- CROFTON, J. and DOUGLAS, A. (1969). *Respiratory Diseases*. Blackwell, Oxford.
- LEWIS, I. C. (1955). The Schönlein-Henoch syndrome (anaphylactoid purpura) compared with certain features of nephritis and rheumatism. *Arch. Dis. Child.*, **30**, 212.
- VERNIER, R. L., WORTHEN, H. G., PETERSON, R. D., COLLE, E., and GOOD, R. A. (1961). Anaphylactoid purpura. 1. Pathology of the skin and kidney and frequency of streptococcal infection. *Pediatrics*, **27**, 181.