THE SCHÖNLEIN-HENOCH SYNDROME (ANAPHYLACTOID PURPURA) COMPARED WITH CERTAIN FEATURES OF NEPHRITIS AND RHEUMATISM

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(RECEIVED FOR PUBLICATION NOVEMBER 10, 1954)

The aetiology of acute rheumatism and acute nephritis is still not fully understood and even less is known about the Schönlein-Henoch syndrome. Gairdner (1948) drew attention to certain similarities between the Schönlein-Henoch syndrome, acute haemorrhagic glomerulo-nephritis, acute rheumatism and periarteritis nodosa. He suggested that an upper respiratory tract infection associated with the haemolytic streptococcus preceded the first three of these conditions so commonly as to suggest bacterial hypersensitivity as an aetiological factor. He postulated that these conditions were related and that the pathological lesions had a vascular basis.

This study aims at enlarging upon some of the points raised by Gairdner, using large series of cases from southern Scotland.

Material

The cases were admitted to the Royal Hospital for Sick Children, Edinburgh, during the 10-year period 1944-1953, and to the Royal Hospital for Sick Children, Glasgow, during the five-year period 1949-1953. Eight cases of the Schönlein-Henoch syndrome included in the review were from the Western General Hospital, Edinburgh, or Leith Hospital.

Too few cases of periarteritis nodosa occurred to be included in this study. The patients were all under 12 years of age except for a few in their thirteenth year from the Glasgow area.

Method of Selection

All cases of the Schönlein-Henoch syndrome were selected which had the

characteristic exanthem and joint and or abdominal symptoms. Only previously unaffected cases of rheumatism and nephritis were included.

Results

The review is based on 139 cases of the Schönlein-Henoch syndrome, 297 cases of nephritis and 307 cases of rheumatism. The sex ratio of these three conditions is shown in Fig. 1. In the Schönlein-Henoch syndrome group there were 81 males and 58 females, in nephritis 182 males and 115 females and in rheumatism 161 males and 146 females.

The seasonal trends are recorded in Fig. 2. The figures are percentages of the total number of cases of each disease. Fig. 2 shows two peaks coinciding with spring and autumn, but when three-monthly groups of cases are examined a different picture is revealed (Table 1). The Schönlein-Henoch syndrome has a peak incidence in spring and autumn. Rheumatism has a low incidence in the summer months but high totals in spring, autumn, and particularly in mid-winter.

SEX RATIO.
EDINBURGH AND GLASGOW.

FIG. 1.

TABLE 1
SEASONAL CASE DISTRIBUTION

	March-May	June-August	Sept.-Nov.	Dec.-Feb.
Anaphylactoid purpura	43	23	43	30
Nephritis	69	73	85	70
Rheumatism	77	47	86	97

Nephritis has an even distribution throughout the year except for a slight autumnal rise.

Fig. 3 presents the ages of onset of the three conditions given as percentages of the total number of cases of each disease. The peak incidence of the Schönlein-Henoch syndrome and of nephritis was 4 to 5 years of age and the graphs of the age incidence of these two conditions are remarkably similar. The peak incidence of rheumatism, however, occurs in the age group 7-9 years. Thirty-five per cent of the cases of the Schönlein-Henoch syndrome and 36% of the nephritic cases occurred in the pre-school years compared with only 7% of the rheumatic cases.

The incidence of preceding upper respiratory tract infections and other types of preceding infection

together with the organism isolated from the throat swab are shown in Tables 2 and 3. Nephritis was preceded by an upper respiratory tract infection in 179 (60·3%) cases, the Schönlein-Henoch syndrome in 69 (49·6%) cases, and rheumatism in 141 (45·9%) cases. The only other preceding infections of note were scarlet fever associated with rheumatism in seven (2·3%) cases and skin or dental sepsis associated with nephritis in 10 (3·4%) cases. The infecting organism was most commonly the haemolytic streptococcus. It was isolated in 24·3% of the cases of the Schönlein-Henoch syndrome, 19·3% of the rheumatic cases and 22·1% of the nephritic cases. It must be emphasized that these results are derived from the Edinburgh cases only. They are based on routine throat swabs usually taken

FIG. 2.

TABLE 2
PRECEDING UPPER RESPIRATORY INFECTION (EDINBURGH AND GLASGOW)

Disease	Upper Respiratory Tract Infection	Scarlet Fever	Rubella, Chickenpox, Measles, Mumps	Skin or Dental Sepsis
Anaphylactoid purpura ..	69 (49.6%)	1 (0.7%)	3 (2.2%)	1 (0.7%)
Nephritis	179 (60.3%)	1 (0.3%)	3 (1.0%)	10 (3.4%)
Rheumatism	141 (45.9%)	7 (2.3%)	3 (1.0%)	3 (1.0%)

TABLE 3
THROAT SWAB RESULTS (EDINBURGH CASES ONLY)

Disease	Haemolytic Streptococci	Other Organisms	Not Swabbed	Total Cases
Anaphylactoid purpura ..	17 (24.3%)	35 (50%)	18 (25.7%)	70
Acute nephritis	30 (22.1%)	75 (55.1%)	31 (22.8%)	136
Acute rheumatism	36 (19.3%)	105 (56.4%)	45 (24.3%)	186

after the patient's admission. Repeated and more thorough 'swabbing' might have produced a higher incidence of pathogens.

In some 2,400 routine swabs taken during 1952 and 1953 from the upper respiratory tracts of patients suffering from conditions other than the three mentioned here, haemolytic streptococci were obtained from only 7.3%.

The interval between an upper respiratory tract infection and the onset of the specific disease had a range of from three days to 35 days with an average of 11 days for the Schönlein-Henoch syndrome, and of 12 days for both nephritis and rheumatism. The scattergram (Fig. 4) gives a more detailed picture of the time interval and it clearly demonstrates that in the majority of cases it lay

FIG. 3.

between seven and 14 days. In a further 13 (9.4%) cases of the Schönlein-Henoch syndrome, 32 (10.8%) cases of nephritis and 16 (5.2%) cases of rheumatism, an upper respiratory tract infection was said to be present at the time of admission.

FIG. 4.
A = Anaphylactoid purpura B = Rheumatism C = Nephritis

Discussion

In reports on these three conditions, the relative incidence of aetiological features has varied but no paper has been found giving information gathered from the one geographical area.

The sex ratio in previous reports on the Schönlein-Henoch syndrome are given in Table 4.

TABLE 4
SEX RATIO IN PREVIOUS REPORTS

Authors	Males	Females
Dusch and Hoche (1890)	33	7
Macalister (1906)	5	4
Pratt (1908)	31	12
Gairdner (1948)	10	2
Philpott (1952)	25	15

The present series gives a ratio of approximately 3 males to 2 females and therefore is similar to the figures published by Philpott whose cases were also all children. With regard to nephritis the sex ratio

is given as 2 males to 1 female by Goettsch and Lyttle (1951) and by Rubin (1954). Scott (1950) in a large series gave the ratio as 241 males to 134 females. Ellis (1951) states that males predominate but Spence and Davison (1953) describe the sex distribution as equal. The present results give a ratio of approximately 3 males to 2 females. Most investigators agree that in acute rheumatism the sex ratio is equal though Sheldon (1953) states that there is a female predominance of 3 to 2. The present review shows a slight male excess which is similar to the findings of Findlay (1931) in a series of cases from Glasgow. Thus the findings show that in cases from southern Scotland the sex ratios for the Schönlein-Henoch syndrome and nephritis are very similar and that of rheumatism differs considerably.

The seasonal trends are not mentioned in articles on the Schönlein-Henoch syndrome. Rubin (1954) and Goettsch and Lyttle (1951) stated that climate had no effect on the incidence of nephritis in the U.S.A. Chasis (1953) remarked that the incidence was directly related to that of respiratory infections. According to Stollerman (1953) the incidence of rheumatism varies with the country or even with parts of a country. Findlay (1931) stated that it was most common in autumn in Glasgow. The results of the present review show that the Schönlein-Henoch syndrome has a distinct spring and autumn peak and that rheumatism gives a similar picture except that there is a further rise over the winter months. The incidence of nephritis has a slight autumnal rise but there is no great variation in any one season.

The pattern of the age of onset of the Schönlein-Henoch syndrome has not been clearly defined. Gairdner (1948) stated that no typical case had been described under the age of 2 years. Philpott (1952) gave the average age of his cases as 5.2 years with a range of from 8 months to 10½ years. Four of his cases were under 2 years of age. The average age of the 139 cases in the present series was 5.6 years and the range was from 10 months to 12½ years. In all, five cases were under 2 years but the graph showed quite clearly that the commonest age groups for the condition were the 4- and 5-year-olds. Nephritis is regarded as a disease of the young child by Goettsch and Lyttle (1951). Rubin (1954) mentioned that two-thirds of the cases occurred in children under the age of 7 years. Ellis (1951) and Spence and Davison (1953), however, say it is commonest in middle and late childhood. The present review shows that nephritis is commonest in the 4- and 5-year-old groups. Sheldon (1953) states that rheumatism has a maximum incidence in

the 7-, 8- and 9-year-old groups, which agrees with the present findings. Kuttner (1954), however, gives slightly lower figures, namely 6 to 8 years, and Findlay (1931) had most cases in the 7-year-old group in his Scottish series. At the other extreme Scott (1948) found that 12 years was the commonest age in those cases attending the Children's Hospital, Melbourne, Australia.

There are some obvious features which suggest a bacterial hypersensitivity as an aetiological factor in the Schönlein-Henoch syndrome. The high incidence of preceding upper respiratory tract infections, frequently associated with the haemolytic streptococcus, and the similarity between the duration of the latent period before the development of the Schönlein-Henoch syndrome and that for the other two conditions point to such a factor. The sharp rise in the numbers of cases of the Schönlein-Henoch syndrome occurring in the spring and autumn would also suggest a relationship with respiratory tract infections.

Summary

A series of cases of the Schönlein-Henoch syndrome, acute haemorrhagic glomerulo-nephritis, and acute rheumatism have been compared with regard to sex ratio, age of onset, seasonal trends and the incidence of previous upper respiratory tract infections, particularly those associated with the haemolytic streptococcus.

It is suggested that the evidence supports a close relationship between the Schönlein-Henoch syndrome and acute nephritis and a bacterial hypersensitivity as a major aetiological factor in all three conditions.

I wish to thank Professor R. W. B. Ellis, Dr. D. N. Nicholson and Dr. D. M. Douglas for giving me access to their wards and case records. I am also deeply grateful to Professor S. Graham and Dr. J. H. Hutchison of Glasgow, and Dr. J. O. Forfar of the Western General Hospital, Edinburgh, who so kindly allowed me to review the case records of their units.

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