

## Social class and infectious mononucleosis

By F. J. NYE

*Communicable Diseases Unit, St. George's Hospital, London, S.W. 17*

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### SUMMARY

The socio-economic status of 80 patients with infectious mononucleosis was compared with the socio-economic distribution of the general population in the same area of south-west London. An excess incidence of infectious mononucleosis was observed among subjects from upper socio-economic groups. A possible relationship between this observation and the epidemiology of the Epstein-Barr virus is discussed.

### INTRODUCTION

Students in the U.S.A. have a high incidence of infectious mononucleosis (Evans, 1960; Evans, Niederman & McCollum, 1968), and similarly students in the United Kingdom appear to be particularly susceptible, although few prevalence studies have been reported from this country. Little is known of the incidence of the disease in other occupational groups, partly because of the low incidence of infectious mononucleosis (IM) in the general population. According to laboratory reports from England and Wales, the incidence of IM is highest among doctors, nurses and other medical workers, and lowest among manual workers (Newell, 1957). Similar findings have been reported in the U.S.A. Niederman (1956) compared the occupations of patients admitted to hospital for IM with the occupations of those admitted for some other diseases. Thirty-two per cent of IM patients were hospital workers compared with only 4% of patients with other diseases. In non-medical personnel IM was equally common in manual and professional workers.

Unfortunately the results obtained in both these surveys are likely to have been influenced by the relative ease with which persons in different occupations have access to diagnostic facilities. The aim of the present study was, therefore, to monitor all cases of IM within a defined mixed residential area, and to relate the socio-economic status of these patients to the social structure of the population from which they were drawn.

### PATIENTS AND METHODS

The population studied was that of the immediate catchment area of St George's Hospital, London, S.W. 17, which covers fifteen municipal wards of two Greater London boroughs; the total population of the area at the 1966 10% census was 225,620. The investigation formed part of a wider survey of the sero-epidemiology of the Epstein-Barr virus.

Patients with IM were detected in three ways.

- (i) Notifications by general practitioners in the area.
- (ii) Requests to the hospital haematology laboratory for Paul-Bunnell tests.
- (iii) Admissions to hospital.

Patients with a history and physical signs compatible with IM were admitted to the study if they developed a positive Paul-Bunnell-Davidsohn differential absorption test. Most patients also had an atypical lymphocytosis in the peripheral blood. Students and nurses living in institutions were excluded from the study.

The social class analysis was based on 80 of 92 consecutive cases of IM detected in the catchment area during the period from 1 November 1969 to 13 February 1971. Because many of the patients were still at school, the social background of the IM group as a whole was assessed by defining in each case the socio-economic status of the male head of the patient's household. Seventy-one families (containing 76 index cases) were visited, and each was allotted on this basis to one of 17 socio-economic groups (General Register Office, 1966). The socio-economic background of a further four patients (all adult males living away from home) was assessed on the basis of the patient's own occupation.

Seven of the patients omitted from the analysis could not be accurately classified using the information available; the remaining five patients were excluded because the lack of a male head of household prevented subsequent comparison with the catchment area population. Occupational information was sufficiently complete to indicate that four of the twelve patients omitted were from upper, and two from lower, socio-economic groups.

The social structure of the catchment area population was obtained from the 1966 10% census, which gave information for each of the 15 municipal wards involved. These data provided the socio-economic distribution of economically active males; the distribution of male heads of household was assumed to be the same.

## RESULTS

Comparisons between the IM population and the catchment area population (see Table 1) revealed an excess of IM subjects in each of three occupational categories made up of non-manual workers, and a deficit in each of four occupational categories mostly containing manual workers. The excess of IM patients in upper socio-economic groups ('Group A') and the corresponding deficit in lower socio-economic groups ('Group B') was statistically significant ( $\chi^2 = 8.6$ ,  $P < 0.01$ ).

## DISCUSSION

The observed differences in the incidence of infectious mononucleosis may have been influenced by under-diagnosis among members of lower socio-economic groups, since such subjects may have been less frequently investigated and may have been less likely to consult a doctor in the first place. On the other hand, the general practitioners in the area were asked to notify all cases of *suspected* infectious mononucleosis (and such patients were often found to have other illnesses) so it is unlikely that many cases reaching medical attention were missed. This is sub-

Table 1. Comparison of the socio-economic distribution of IM patients with that of the surrounding general population

	Socio-economic groups	Occupational category	Economically active males in population (1966 10% census)		Infectious mononucleosis patients (by male head of household)*	
			Nos.	%	Nos.	%
'Group A'	1, 2, 13	Employers and managers	679	9.7	12	16
	3, 4	Professional workers	306	4.4	4	4
	5, 6	Non-manual workers (skilled and partly skilled)	1761	25.3	26	34
Total group A	—	—	2746	39.4	42	55
'Group B'	8, 9	Skilled manual workers	2335	33.5	23	31
	7, 10, 15	Semi-skilled manual workers Personal service workers	1028	14.7	5	7
	12, 14	Own-account workers (other than professional)	311	4.5	3	4
Total Group B	—	—	553	7.9	2	3
Total all subjects	—	—	4228	60.6	33	45
			6974	100	75	100

\* See text.

stantiated by the total incidence in the catchment area (3.3 cases per 10,000 population per annum) which was similar to that quoted for other areas of the United Kingdom (reviewed by Pollock, 1969).

The results may also have been influenced by undetected differences between the two populations. It was assumed, for example, that the socio-economic distribution of economically active males in the catchment area would accurately reflect that of male heads of household, but it is possible that single men without dependents formed a relatively larger proportion of this population in some categories, e.g. unskilled manual workers. This would tend to 'weight' the catchment area population in favour of lower socio-economic groups, though it seems unlikely that the results can be entirely accounted for on this basis.

The prevalence of IM among the families of professional workers did not reflect the overall excess observed in upper socio-economic groups. However, the incidence of IM among young adults from upper socio-economic backgrounds was probably underestimated, because a high proportion of such subjects tend to be students living away from home. If it had been possible to detect IM among the absent student members of families living in the catchment area, the excess of IM in upper socio-economic groups would probably have been greater. No attempt was made to detect IM among students and nurses living in institutions, since such subjects did not form part of the 'general' population of the catchment area.

The observed socio-economic distribution of infectious mononucleosis should be contrasted with that of antibody to the Epstein-Barr virus, an agent considered by many to be the 'necessary cause' of the disease. Thus children in the U.S.A. from middle-class backgrounds have a low prevalence of antibody (Henle & Henle, 1970) while a high antibody prevalence has been reported in lower socio-economic groups, e.g. military recruits (Lehane, 1970), paediatric patients in Philadelphia (Henle & Henle, 1967) and the mixed population of Chicago (Tischendorf *et al.* 1970). The observation that IM is more common among upper socio-economic groups therefore supports the idea that the disease results from a primary Epstein-Barr virus infection in subjects who have escaped subclinical infection in childhood.

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