VIRUS ANTIBODY STUDIES IN EXACERBATIONS OF CHRONIC BRONCHITIS

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MANY factors, such as temperature changes, emotional disturbances, atmospheric pollution and respiratory tract infections often precede and are said to cause a deterioration in the condition of a person suffering from chronic bronchitis. The repetitive virus infections to which we are all subject may bring about a failure of defence of the lower respiratory tract which is a feature of chronic bronchitis (Stuart-Harris *et al.*, 1953). Tyrell (1952) believes that influenza may cause an exacerbation of symptoms in those suffering from chronic chest disease.

Jack and Gandeva (1960) found that virus isolation and serologic techniques failed to reveal evidence of infection with influenza A and B viruses, adenovirus, haemadsorption or croup-associated viruses during the year of observation in spite of clinical evidence of exacerbations of chronic bronchitis.

This paper records a similar study, by serological techniques, of the evidence of infection by influenza A, B and C viruses, adenoviruses and those of psittacosis and Q fever, in exacerbations of chronic bronchitis.

Method

Sixty patients, of both sexes, suffering from chronic bronchitis (Scadding's, 1959, definition) were chosen for this study which took place between 1 October 1961 and 31 March 1962. The patients were those of a partnership of three general practitioners in Dumfries.

1. Blood was taken from the patient on the day an exacerbation was notified and again ten days later. Sera from these samples were submitted to the Regional Virus Laboratory, Ruchill Hospital, Glasgow, for antibody studies by complement fixation technique for

the viruses mentioned above.

2. Sera were collected from 60 cases and 60 controls in October 1961 and at the end of the winter March 1962. For various reasons paired sera from only 54 cases were available for comparison with their controls.

Results

The total number of exacerbations notified by the 60 patients was 42, made up as follows:

Number of patients having	1 exacerbation:	26 = 26 exacerbations
„ „ „ „	2 „	3 = 6 „
„ „ „ „	3 „	2 = 6 „
„ „ „ „	4 „	1 = 4 „
		thus 32 patients had 42 exacerbations

Out of the group of 60 bronchitics, 32 notified 42 exacerbations and 28 patients experienced no respiratory illness sufficiently severe enough to be notified.

TABLE I

SEROLOGICAL FINDINGS IN EXACERBATIONS OF CHRONIC BRONCHITIS

	Influenza A	*Influenza B*	*Influenza C*	*Adeno-virus group*	*Psit-tacosis group*	*Q fever*
Rising titre ..	0	1	3	1	0	0
High titre ..	2	1	0	0	0	0
Falling titre ..	0	0	3	0	1	0

Rising titre: 4-fold or greater rise in titre.
Falling titre: 4-fold or greater fall in titre.
High titre: High (greater than 1.64) titre but not rising.

Table I shows that out of 42 paired sera submitted only 12 pairs showed evidence of existing or waning infection; five showed a rising titre; three, a high titre and four a falling titre of the virus antibodies which were studied.

A rise in antibody titre indicates current infection by the relevant virus. This occurred in only 5 instances of 42 exacerbations of chronic bronchitis. It is reasonable to conclude that this study failed to show that infection with influenza A, B and C, the adenovirus group, psittacosis or Q fever is a common precipitating factor of exacerbations of chronic bronchitis.

The results obtained in the sera collected at the beginning and the

end of the winter from cases and controls are shown in table II.

TABLE II

POSITIVE SEROLOGICAL RESULTS IN CHRONIC BRONCHITIS FROM PAIRED SERA COLLECTED OCTOBER 1961 AND MARCH 1962

Test antigen	*54 Cases*				*54 Controls*			
	Rising titre	*High titre*	*Falling titre*	*Totals*	*Rising titre*	*High titre*	*Falling titre*	*Totals*
Influenza A ..	3	3	1	7	0	1	3	4
„ B ..	5	1	0	6	1	0	2	3
„ C ..	4	3	4	11	0	3	2	5
Adenovirus gp.	1	0	0	1	2	1	0	3
Psittacosis gp. ..	0	0	1	1	0	0	1	1
R. burneti ..	0	0	1	1	0	0	1	1
Total positives	13	7	7	27	3	5	9	17

Rising, high or falling titres were obtained in 27 cases but in only 17 controls; in the bronchitis group those titres were mainly to influenza type A, type B and type C. To find out if those results are significant it will be necessary to examine a large number of cases with matched controls.

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