THE INCIDENCE OF PRIMARY ATYPICAL PNEUMONIA OF UNKNOWN ETIOLOGY*

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In the period from 1934 to 1936 reports[1, 3, 9] appeared which described the symptoms and the clinical, laboratory, and roentgenological aspects of a variety of pneumonia now widely recognized and accepted as a common syndrome. In one publication[9] the term bronchopneumonia was used to refer to "those acute pulmonary infections of unknown etiology which occur in adolescence," and the opinion was hazarded that this type of disease was quite prevalent but had previously often been diagnosed as "grippe" or "acute bronchitis" because the slight degree of malaise and the obscurity of physical signs, which often characterized it, did not suggest the presence of pneumonia. Since that time there have been published numerous reports[4, 5, 10, 12, 14, 16, 17, 19, 20] of a type of pneumonia characterized by obscure early physical signs, relatively mild symptoms, little or no leukocytosis, but x-ray evidence of relatively extensive pulmonary infection. Not all cases of this disease are mild, a few have been fatal,[5, 14, 16, 20] and considerable variation in course, symptoms, and signs exists among those now grouped under the heading "primary atypical pneumonia, etiology unknown." Already several different causative agents[2, 6, 7, 21] have been suggested and eventually this syndrome may be divided into many types of pneumonia, each with its proper etiological label, but there still remain a large number of cases easily differentiated from pneumococcal pneumonia, hemolytic streptococcal pneumonia, the secondary bronchopneumonias of measles and whooping cough, Friedländer's bacillus pneumonia, and psittacosis. At present the accurate but cumbersome title "primary atypical pneumonia, etiology unknown"[18] is generally applied to that syndrome which has been called bronchopneumonia,[4, 9, 14, 16] acute influenza pneumonitis,[3] acute pneumonitis,[1, 10, 6] acute interstitial pneumonia,[19] virus pneumonia,[12] etc.

The large number of these reports during the past 14 years has raised the question whether the disease is a "new" one, and also whether this disease is becoming increasingly prevalent. It seems very im-

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probable that the disease is truly a new one: it seems more likely that it has only become more generally recognized; Dingle and Finland[8] refer to both clinical and pathological reports of a similar entity published in the latter half of the eighteenth century. Prior to the development of specific antisera for some of the types of pneumococcal pneumonia there was little necessity for, and only limited interest in, the etiological classification of each case of pneumonia. With the advent of serum therapy, however, that situation changed and twenty years ago it became common practice to make every effort quickly to determine the causative agent of each acute pulmonary infection, and consequently knowledge of the distinguishing clinical and laboratory criteria of the several varieties of pneumonia became more widespread. This attitude, which detected those pneumonias which did not fit into one of the accepted categories, was developing at a time when x-ray diagnosis was beginning to be more widely employed and when health departments at boarding schools and colleges were expanding their facilities. When less expensive, portable and shockproof x-ray equipment became available, and when physicians had become increasingly familiar with x-ray interpretation, such institutions used this diagnostic aid very freely. These factors, the increased interest in the etiology of each respiratory ailment, the development of health departments in institutions whose population embraced the adolescent and young-adult age groups (members of which may be particularly susceptible to this disease), and the more liberal use of x-ray in diagnosis, seem adequately to explain the increased frequency with which this syndrome has recently been recognized and reported. Its high incidence among the armed forces can be satisfactorily explained by its communicability, the bringing together of large groups, and the excellent facilities for diagnosis at military hospitals.

During the period from September 1935 to September 1947 data are available (Table 1) indicating the incidence of this disease among students at a New England boarding school. In these years the data relate to a resident group of from 630 to 690 male adolescents. During these years all boarding students who became ill were admitted to the institution's hospital, and x-rays were taken of all who had either cough or unexplained fever. The similarity of a few of these cases to what might be called "grippe" has been pointed out;[10] some were very severe, but none were fatal infections; at times the incidence reached epidemic proportions.[11] In no case were we able to associate the illness with any form of ornithosis,[15] cross-infection from cats,[2] or "Q" (rickettsial)

fever,[6] but neither laboratory nor epidemiological studies were sufficiently complete so that one could *positively* eliminate any given agent as being a possible etiological factor. In none of these cases was a test done to determine the presence of cold agglutinins.[13]

In reviewing the data in Table 1 it should be remembered that the figures for December and March undoubtedly are affected by the Christmas and spring vacation periods which approximately cover the intervals from December 18 to January 7 and from March 12 to March 30. Prior to 1942 no students were in attendance during the summer months, but beginning in that year the school hospital has been open from about June 25 to August 20 and has served a summer population averaging 200 students. It is obvious that there has been a wide yearly variation in the incidence of this disease within this student population; within this group the number of cases yearly has ranged from 2 to 40. The total number of cases for these twelve academic years was 149 and the average number per year about 12. There is nothing in these data to suggest an increase in the incidence of this disease within the past few years: there were 69 cases from January 1936 through December 1940 and 71 cases from January 1942 through December 1946.

Table 1 indicates that this type of pneumonia is most prevalent from October to June, but it does occur occasionally during the summer. November, in this series, provided the most cases, and October, February, January, and April follow in that order. The October and November incidence was obviously considerably affected by the 1939 epidemic. The effect of the vacation periods upon the December and March figures is probably considerable, and were school in session during those weeks it is possible that the number of cases for those two months might be doubled. For comparison, the number of cases of pneumococcal pneumonia which occurred in this group has also been recorded; primary atypical pneumonia had an incidence about eight times as great.

Summary

Data relating to the incidence of primary atypical pneumonia within a boys' boarding school population over the period from September 1936 to September 1947 do not indicate an increase in its frequency during that interval.

At only one time during that 12-year period did this disease assume epidemic proportions within the community observed.

TABLE 1

THE INCIDENCE OF PRIMARY ATYPICAL PNEUMONIA AND OF PNEUMOCOCCAL PNEUMONIA DURING THE SCHOOL YEARS 1935-1947.

Year	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July**	*Aug.**	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Total*	*Approximate population*	*Total cases pneumococcal pneumonia*
1935	—	—	—	—	—	—	—	—	0	0	2	1	3	630	0
1936	1	2	0	0x	0	0	—	—	0	1	6	1	11	635	1
1937	2	3	2	1	0	0	—	—	2	1	1	0	12	635	0
1938	0	0	0	0	0	0	—	—	1	2	0	0	3	640	0
1939	1	4	0	0	0x	0	—	—	0	16	15	4	40	645	1
1940	0xx	1xx	0	0	0	1	—	—	0	0	1	0	3	660	4
1941	0	1	0x	0	0x	0	—	—	1x	0	0	0	2	665	3
1942	0	8	1	3	0	0	0	0	1	1	1	2x	17	650	1
1943	7	3x	0	3	3	0	2	0	0	2	3x	0x	23	640	3
1944	2	0	1	2xx	1	0	0	0	0	2	2	1	11	665	2
1945	0	0	1xx	1	0	0	0	0	1	1	0x	0	4	670	3
1946	1	6	2	3	1	0	0	0	1	0	2	0	16	690	0
1947	0	1	0	0x	0	0	3	0	—	—	—	—	4	690	1
Total	14	29	7	13	5	1	5	0	7	26	33	9	149	—	19
Average	1.2	2.4	0.6	1.1	0.4	.08	0.8	0	0.6	2.2	2.7	0.7	12.4	655	1.5

Each x indicates a case of pneumococcal pneumonia.
* Summer sessions in 1942-1947 with a population averaging 200 students.

In this series of 149 cases the highest incidence occurred during the late fall and the winter months.

It is suggested that this disease occurs no more frequently than formerly, but is now more readily recognized because of the fortuitous combination of a wider interest in the etiology of acute pulmonary infections and a more extensive use of x-ray in diagnosis.

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