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Post-Influenzal Depression

KENNETH SINANAN and IRENE HILLARY

Summary: A prospective study was carried out on post-influenzal depression. Four hundred patients presenting with psychiatric illness for the first time took part. The results show that there is no correlation between depressive illness and the demonstration of influenza antibody titres, an indication of recent influenza infection.

A search of the literature revealed no convincing evidence that 'post-influenzal depression' exists. However, an editorial in the *British Medical Journal* (1971) states that "intractable depression may sometimes follow attacks of influenza", and this statement can be found elsewhere (Slater and Roth, 1969; Watts, 1973). Pillay (1959) reported 50 cases of 'post-influenzal' depression in general practice, but he did not do antibody titres to confirm the diagnoses. Flewett and Hoult (1958), Bental (1958) and Lloyd Still (1958) reported a number of cases in which a psychotic illness clearly followed an attack of Asian influenza, in some of which they demonstrated raised influenza antibody titres.

If depression follows influenza, one would expect an increase in psychiatric admissions following an influenza epidemic. There is a striking lack of such reports.

In view of the ease of estimation of influenza antibody titres it is surprising that a study to test the relationship between depression and influenza has not been reported.

In 1974 we set up a prospective study to do this. We had completed the study in 1977 and were about to analyse our data, when we were alerted that a major influenza epidemic was likely to reach Ireland because of an increase in reported cases in the United Kingdom. We re-opened the study to take advantage of this. However, the incidence of influenza did not reach epidemic proportions and our study therefore is divided into two parts.

Methods

All new patients seen by one of us (K.S.) in Cluain Mhuire Family Centre, a psychiatric catchment area service, between June 1974 and August 1977 (Sample 1), and between February 1978 and February 1979 (Sample 2), were asked if they had had influenza within the previous six months. There were 298 patients in the first sample and 102 in the later sample. A psychiatric diagnosis in accordance with the International Classification of Diseases (1965) was made at the initial interview.

Depressed patients were placed in endogenous, neurotic or mixed categories. Patients whose depression was secondary to schizophrenia, alcoholism or other illness, were allocated to the non-depressed group. A 10 ml sample of blood was taken after informed consent. Attempts were made to obtain serial blood samples but these were abandoned due to administrative difficulties and poor patient compliance. Five patients refused to give blood and they were excluded from the study. Sera were separated and coded by the nursing staff and sent to the Department of Microbiology, University College, Dublin.

Each patient completed a Lubin Adjective Check List (Lubin, 1965).

After heating to 56°C sera were tested for antibodies to influenza A and B, para-influenza 3, brucellosis and Q fever by complement fixation (CF) using standard methods (Bradstreet and Taylor, 1962). In addition, sera were tested by the Standard Agglutination Test (SAT) and Coombs Anti-Human Globulin (AHG) test for brucellosis.

Sera were heated to 60°C for use in Q fever CF test to eliminate false positive reactions (van der Veen and Heyen, 1966).

WHO standard antigen was used in the three tests for brucellosis. All other complement fixing antigens and antisera were obtained from the Public Health Laboratory Service, Colindale, London.

Comparisons were made between influenza antibody titres and Lubin scores within subgroups of patients.

In accordance with standard procedure, the detectability of influenza antibodies was determined at increasing blood dilutions. By taking the reciprocal of the highest reactive dilution an ordinal scale was produced representing the likelihood in each case of

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TABLE I

Influenza antibody titres in depressed and non-depressed patients

	Group	Number	Mean rank	Mann-Whitney significance
Total	Depressed	215	205	NS
Sample	Non-depressed	185	195	
	Total	400		
Sample 1	Depressed	154	156	NS
	Non-depressed	144	143	
	Total	298		
Sample 2	Depressed	61	49	NS
	Non-depressed	41	56	
	Total	102		
		Sample 1 1974–1977 Sample 2 1978–1979 Total sample 1974–1979		

recent influenza. Since the highest reactive dilution encountered was 1/256, this was a 7-point scale ranging from 0 through 8, 16, 32, 64, 128 to 256. The Mann-Whitney U test was used to assess differences between sample medians.

Lubin scores, on the other hand, were taken to constitute an interval scale. This was supported by an examination of the statistical properties of the set of Lubin scores. They were found to be normaly distributed. T-tests were therefore used. Where the variances of the Lubin score distributions were significantly unequal, an approximation based on separate variance estimates was used.

Results

Four hundred patients were studied: 215 were suffering from a depressive illness—133 endogenous, 51 mixed and 31 neurotic depression. Of the 185 non-depressed patients 64 were alcoholics, 39 were schizophrenics, 12 had personality disorders, 28 had neuroses, six had sexual problems, 12 had marital disharmony, eight had dementia and there were nine other diagnoses.

There was no significant difference in influenza antibody level between depressed and non-depressed patients (Table I).

There was a significant difference in titres between the patients studied in 1974–77 and the patients studied in 1978–79, showing that there was a higher incidence of influenza in the latter period.

TABLE II

A comparison of Lubin scores in those patients who claimed to have had influenza and those who had not

	1974–1977 Sample 1	1978–1979 Sample 2	1974–1979 Total sample
'No' influenza	15.34±8.75	16.95±7.60	15.72±8.36
'Yes' influenza	16.71±7.19	17.61±6.07	17.00±6.82

No significant differences.

In the total sample there was no significant difference in titres between those who claimed to have had 'flu' and those who did not. However, in the 1974–77 group those who claimed not to have had influenza had higher titres than those who gave a positive history ($P < .05$). There was no significant difference in titres between depressed patients who claimed to have had influenza and those who denied recent infection.

Table II shows that there was no significant difference between the Lubin scores of the patients

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who claimed to have had influenza and those who did not.

There was no significant difference in Lubin scores between groups studied before and after the threatened epidemic. Only one patient was found to be suffering from brucellosis. He is included in the non-depressed group with a primary diagnosis of alcoholism.

No patient had Q fever.

Discussion

It is clear that many people would cope with a transient depressed mood following influenza. Their personality and circumstances would be such that they would not consult a doctor. However, we can assume that if 'post-influenzal depression' were a clinical entity, at least some patients would be referred to a psychiatrist after a severe and debilitating bout of influenza.

The results of this study show no correlation between depressive illness and the demonstration of influenza antibody titres as measured by complement fixation.

Many patients attribute a variety of symptoms to a recent bout of influenza in an attempt to rationalize their depression both to themselves and their families. In fact we showed that patients suffering from psychiatric illness who did not claim to have had 'flu' were more likely to have had serological evidence of this.

The estimation of CF antibody titres to influenza is a reliable method of confirming or refuting recent illness. In this study we could not demonstrate significant influenza antibodies in the depressed groups of patients.

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Kenneth Sinanan, M.A., M.D., M.R.C.Psych., *Consultant Psychiatrist, Cluain Mhuire Family Centre, Blackrock, Co. Dublin*

Irene B. Hillary, M.D., F.R.C.Path., D.C.H., D.P.H., *Senior Lecturer, Department of Medical Microbiology, University College, Dublin*

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