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Influenza in a geriatric unit

H. T. GOWDA
M.B. B.S.

Registrar in the Department of Geriatric Medicine, St Luke's Hospital, Huddersfield HD4 5RQ, West Yorkshire

Summary

An outbreak of influenza A (resembling A/Victoria/3/75) occurred in 2 geriatric wards in February 1976 and, out of 19 patients, 3 died. Of the patients who were at risk, 30% were affected.

Immunization for influenza in the elderly just before the winter is suggested. The procedure is simple and inexpensive. The recommendations of the DHSS (U.K.) for the use of influenza vaccine to practising doctors is, therefore, welcome.

The suitable treatment appears to be that of repeated immunization with inactivated vaccine. Amantadine in the elderly population may also be effective, and is worthy of trial.

Introduction

Very few reports on influenza in the elderly have been published although the elderly are particularly at risk. This risk is increased when the frail and elderly are grouped together in institutional care. The publicity surrounding one such outbreak in an old people's home in Newcastle during the winter of 1976/77 drew wide attention to the magnitude of the risks. Immediate relevance is accorded the whole subject by the recommendations from the DHSS for the use of influenza vaccines this (1978/9) winter. These give increased emphasis to vaccination for elderly people resident in institutions and geriatric wards.

The term influenza was coined by Villani and Segni in 1358 to denote the 'influence' of the stars.

Since the discovery of the influenza virus in 1933, epidemics (interpandemic) of influenza A virus infection have been described each year, although individual communities are usually spared a recurrence for 2 or more years after an epidemic. Epidemic infection due to influenza A virus is commonest in the early months of the year in northern temperate zones. Each epidemic usually rises to a peak in 12–14 days and subsides almost as rapidly. Mortality is greatest at the extremes of age and usually occurs as a result of complicating bacterial pneumonia. The immunity which follows an epidemic is type specific and of short duration. This causes problems in securing effective immunization.

The following account of an outbreak of influenza A virus infection in 2 wards of a geriatric hospital indicates the severity of the illness and underlines the problems of immunisation. These problems are considered in the discussion. The patients described were under the care of one of the physicians in geriatric medicine. Figure 1 illustrates the marked rise in the mortality rate in all the wards under the physician's care during the period of this study compared with that of the winters of 1974/5 and 1976/7.

Patients and illness

Early in February 1976, 19 patients (5 men, 14 women) became acutely ill in 2 wards of a geriatric unit (1 rehabilitation and 1 admission ward). Their ages ranged from 65 to 86 years. All the patients developed pyrexia ranging from 38c to 39c at intervals of 1–2 days over a period of 6 days. All these patients also developed headache, myalgia, asthenia and a dry cough. The illness was moderate to severe in all the patients, a few developed severe respiratory complications predominantly bronchopneumonia, and 3 died (on day 6). A clinical diagnosis of influenza was made. Temperature returned to normal gradually within one week of the illness in all the patients except in the 3 who died. Ampicillin was administered to all patients within 2–3 days of onset. The blood pressure remained low in the patients who died and in the others it remained within the normal range. All the patients had tachycardia, and the condition of the patients who had cardiac failure before the illness became worse. Although 50% of the patients were not confused before the illness, all showed a mild to moderate degree of confusion after the illness but this cleared gradually as they recovered. No other neurological manifestations were noted. Electrocardiogram recordings showed no new significant changes. Chest X-rays showed patchy consolidation only in 3 patients. Of the 19 patients, 10 had been admitted for varying degrees of cerebro-vascular accident, 5 for cardiac failure secondary to either ischaemic

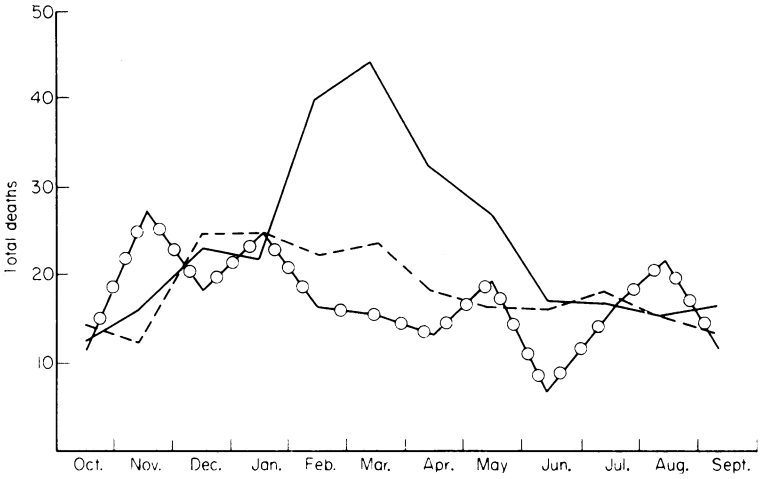

FIG. 1. Total deaths by month in Geriatric Unit 1, winters - - - - - 1974–75; ——— 1975–76; —○— 1976–77.

heart disease or hypertension, 2 for carcinoma, one with diabetes mellitus and one for senile dementia. The 3 deaths were attributed to broncho-pneumonia secondary to influenza on clinical grounds. Post-mortem was not carried out. Although the source of the infection could not be traced it was thought that it could have been introduced by visitors.

Investigations

Blood samples were collected on 12.2.76. for influenza antibody titre from all 19 patients.

The second sample of blood was taken during the acute phase of the illness on 25.2.76 in all except the 3 who died. Throat swabs were also taken, and influenza A virus was isolated from the swab from one of the 3 who died. The serum samples in all cases were tested for antibody titre by means of the complement fixation test and in 4 cases, also by haemagglutination test. All except 3 of the samples showed influenza A antibodies the first time and the low titre indicated there had been an infection earlier in life. The second sample of serum from 11 patients showed a significantly raised titre of CF antibodies, confirming the infection with influenza A virus (Table 1). In 3 of 4 other qatients, although CF antibodies were absent, the haemagglutination inhibition test revealed a significant rise in titre to influenza A virus, thus confirming the influenza infection. The strain was identified as being similar to A/Victoria/3/75 (Table 2).

TABLE 1. Antibody titre of sera tested – complement fixation test

Case No	First sera		Second sera	
	A	B	A	B
1	64	16	512	16
2	18	8	256	8
3	16	32	128	32
4	16	8	512	8
5	8	16	128	16
6	64	16	512	16
7	32	8	128	8
8	16	8	256	8
9	16	8	128	8
10	16	8	128	8
11	8	8	256	8
12	Influenza virus isolated from throat swab. Sera not tested			

TABLE 2. Haemagglutination inhibition test – Influenza A virus

Case No.	Date (Feb. 1976)	A/ England 42/72	A/Port Chalmers 929/73	A/ Scotland 840/74
13	12th	40	10	20
	25th	160	40	160
14	12th	20	10	10
	25th	80	80	20
15	12th	80	10	10
	25th	160	10	40
16	12th	20	10	10
	25th	10	10	10

Discussion

This outbreak in February 1976 coincided with an increased mortality rate in other wards of the same unit (nearly twice that of the winters before and after) (Fig. 1).

Ever since the isolation of the influenza virus in 1933 recurrent epidemics have occurred in all

countries. Residential communities favour the spread of influenza virus. In one outbreak in a long-stay geriatric ward which spread to adjacent wards, the attack rate was 20%, and, although the infection was mild with only one death, the affected patients remained debilitated for some weeks (Grist, Kerr and Isaacs, 1961).

The elderly are particularly susceptible to complications. Fry, in his Beckenham practice, showed in the 1959 epidemic that chest complications occurred in 36% of those over 60 years and in 73% of those over 70 years with influenza (Fry, 1959). Debility following an attack in an individual patient may considerably prolong rehabilitation or may render it impossible. As regards mortality, in the first wave of Asian influenza (A2) in the autumn of 1957 it was estimated that in England and Wales there were about 10 000 excess deaths from all causes in persons over 65 years of age; although the excess mortality attributed to influenza on the death certificate was only in a small proportion. It is clear that some form of chronic pulmonary or cardiac disorder among elderly persons assists the development of bronchitis during influenza and doubtless contributes to the high mortality.

The author ponders whether one should be concerned about a high mortality in the elderly, when, after all, it has been recognized for a long time and pneumonia used to be regarded as the old man's friend. He believes it should concern us. If an outbreak of influenza occurs in a home for the elderly, the staff is probably depleted through illness, many residents are confined to their beds and acutely ill. The situation can readily become chaotic putting a severe strain on the medical and supportive services (Allen, Dickson and Potter, 1969).

Successful control of influenza may significantly reduce the chance of hospital admissions amongst older people during the late winter months of the year. More effective treatment may help, although there is no evidence yet that early administration of antibiotics will improve mortality in the elderly. Certainly, all the author's patients were given antibiotics early in the illness. Although amantadine hydrochloride both as a prophylactic and curative has been tried in the younger population by many workers it has given variable results and has not been tried in the elderly population. Clinical evidence supports the view that amantadine has a definite though marginal effect in shortening the duration of fever in influenza by some hours (Galbraith *et al.*, 1971). Nevertheless, the lack of a consistent and rapid defervescence in the clinical trials affords little support for the wider use of amantadine in the therapy of influenza at present.

Inactivated influenza vaccine is still the principal one in use in most countries including the U.S.A. and the U.K. Bivalent vaccines which should contain a single influenza A and a single influenza B virus are now recommended in both the U.K. and the U.S.A. The virus selected as seed must possess an antigen matching as closely as possible the current field virus. Estimates of the degree of protection against epidemic influenza afforded by inactivated vaccines vary widely. Field studies have by default to be accepted as the final answer to the assay of influenza vaccine. In the M.R.C. report of 1958, the clinical protection rate of 66% was obtained in the various groups immunized before the epidemic of Asian influenza of 1957. Repeated inoculations may be important in the immunization of aged persons (Mackenzie, 1977).

A retrospective survey of the prevalence of influenza amongst 1288 elderly persons in Hertfordshire residential homes showed a significantly lower attack rate ($P < 0{\cdot}0001$) amongst those immunized (Allen *et al.*, 1969). There were 31 deaths from influenza or its complications among the non-immunized group but no deaths occurred in the immunized group. It must be observed, however, that the diagnosis was not confirmed by virological or serological studies nor was it possible to relate events in the homes to epidemic influenza in the community.

However, these reservations do not apply to the trials reported to the M.R.C. by its committees on influenza and other respiratory virus vaccines in 1964 (Report of the M.R.C. Committee, 1964). The sickness and mortality of the non-vaccinated were generally similar to those of the vaccinated but tended to be a bit lower. This trial yet again failed to answer the important question of whether an effective influenza vaccine will reduce mortality in the elderly and debilitated.

Monovalent vaccine was shown to be protective against A2 influenza during an epidemic, and a repeated vaccination is better than a single vaccination (Stuart *et al.*, 1969). However, disease incidence has no discernible relationship to vaccination which may be attributed to inadequate potency of commercially obtained inactivated influenza virus vaccine and this may be a greater problem than is generally realized (D'Alessio, Cox and Dick, 1969).

Widespread immunization against influenza should certainly be advocated with caution. The association of the Guillain-Barré syndrome with the widespread swine influenza vaccination campaign in the U.S.A. may be disturbing. The Guillian-Barré syndrome occurred in approximately equal numbers in both vaccinated and non-vaccinated although careful analysis showed that the syndrome was 7·5 times more likely to occur in the vaccinated group. The risk in the U.S.A. was estimated to be 1/130 000 vaccinations, a rate which is probably lower than the risk of death from a winter influenza outbreak in Britain,

The available evidence seems sufficient in the author's view to make it reasonable, economical and safe to vaccinate the elderly against influenza before winter each year.

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