Adults with pertussis

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SUMMARY. Eighty adults were diagnosed in one general practice as having infection due to *Bordetella pertussis,* type 1.3, during a period of 30 months. Their clinical presentation and progress is recorded. A plea is made for attention to be paid to this infection in adults.

Introduction

BECAUSE whooping cough is a disease of childhood it is not surprising that children have received most attention over the years. No age is exempt, although the illness may be atypical in adults (Christie, 1980). The DHSS report on whooping cough (1981) states that 3.3 per cent of all notifications between 1977 and 1979 were of adults. These notifications must be only the tip of the iceberg. For example, the Swansea Research Unit (RCGP, 1981) has recorded 11.1 per cent over the fifteenth birthday. Children may be infected by adults; the Swansea survey and others (Phillips, 1921; Nelson, 1978) detail mothers and nurses infecting neonates. Infected staff can also contribute to the spread of pertussis to children in hospital (Kurt *et al.,* 1972). The risk to the individual adult is less clear, but in the past it has been described as a "very serious affliction" in the elderly (Osler, 1901). The recent epidemic has focused attention on whooping cough, but have adults received a fair share of this interest?

This paper describes the presentation and progress of 80 patients aged 16 or over, diagnosed as having whooping cough due to *Bordetella pertussis,* type 1.3, in a general practice of 5,000 patients, between November 1978 and May 1981.

Diagnosis

The criteria for diagnosis were a relevant clinical history together with serological evidence. The serological method used was direct agglutination against a suspension of *Bord. pertussis,* type 1.3, as described in the Combined Scottish Study (1970). (No serological test was available for other serotypes of *Bord. pertussis* or for *Bord. parapertussis.*) A titre of 60 or greater was regarded as significant. Sera from 36 controls in the practice, who were not coughing, were matched for age and sex with the first 36 patients, and failed to agglutinate the suspension in a titre of greater than 30.

Because the interval between onset of symptoms and clinical suspicion of pertussis was usually long, isolation of the organism was not attempted.

Patients

Eighty patients between the ages of 16 and 79 years were diagnosed (Table 1). Fifty other patients were tested because they had similar symptoms; however, in these the disease was not confirmed. All but two of the 80 persons diagnosed were British or Irish. They came from 76 households, half of which contained no children. Socio-economic status varied, ranging across the whole spectrum from those with professional qualifications to unskilled workers. Fifty were in employment and some, including three nurses and two ward domestics, had occupations carrying a special risk of infecting others.

Thirty-five of these 80 patients were already being treated or were under observation for significant illness

Table 1. Age, sex and agglutination titres to *Bordetella pertussis,* type 1.3 (highest or only titre where no ≥ four-fold rise). Total positive = 80; total negative = 50.

Age group	≥ Four-fold rising titre	≥960	480	240	120	60	30	<30
16–25	2	4	1	6	4	2	1	9
26–35	1	3	2	4	3	4	1	5
36–45	1	1	2	2	8	1		4
46–55	4	1		4				12
56–65	2	2	2	3	4	2		8
Over 65			1	2	2			10
Male	0	3	4	4	4	6	0	9
Female	10	8	4	17	17	3	2	39

when the diagnosis was made. Eight had chronic obstructive airways disease (two with cor pulmonale); 10 others were at special risk, suffering from hypertension, myocardial ischaemia, recent cardiac surgery, epilepsy or chronic neurological disease. Four pregnant women have been the subject of a separate report (MacLean and Calder, 1981).

Nineteen patients said that they had previously had whooping cough. Practice records of 15 to 25 years before confirmed this in four of the patients, although, unfortunately, no bacteriological evidence was available. One woman of 56 had been in hospital at the age of 18 with a previous adult attack.

Seven of the 19 patients under the age of 26 were known to have had full pertussis immunization.

There was a reasonable probability that the source of infection was known in 20 cases (own children, seven; grandchildren, three; other children, two; and adults, eight). The majority, however, had no idea of the origin of their illness and were very surprised at the diagnosis.

Symptoms and progress

The main symptom at first consultation is shown in Table 2. A quarter had had symptoms for several weeks before consulting, but about half the patients came in the first week, before the typical clinical picture developed. In only 33 was the diagnosis suspected at the first consultation. Many of the remaining 47 did not reappear for some time—over three weeks in nine cases.

Once established, the cough came in spasms, at first dry but usually with the later production of tenacious sputum. There was a feeling of choking. Patients with a chronic cough could detect something different about this cough. The cough was invariably worse at night and usually on exertion. Going out of doors or changing rooms, eating or drinking could precipitate spasms. Only one patient came with a whoop. Six had haemoptysis. The cough was forceful and six complained of muscle pains around the costal margins and one had a subconjunctival haemorrhage. One man, suffering from pseudobulbar palsy, had several drop attacks.

Symptoms often persisted for a long time (Table 3) but a quarter, mostly younger patients, had a mild illness of three weeks. The longest history of cough, without complications, was of 32 weeks. The next most frequent complaint, sore throat, was usually better by four weeks. Vomiting, when present, lasted under one week in two thirds of those with this symptom. Malaise was recorded not only for those feeling physically unwell but also for those with post-infective psychological symptoms. Four patients had loss of concentration and memory: one was referred to a psychiatrist, who described her disability as a post-infective neurasthenia.

Erythromycin was prescribed to 38, usually after diagnosis, in the hope of reducing infectivity. Only 18 were not given an antibiotic at some time during the illness. A large variety of symptomatic medication was also used.

Chest x-rays were taken in 25 patients and six showed significant new abnormalities, mainly pneumonic. Two patients were found to have unsuspected bronchogenic carcinomas (MacLean, 1981).

Paired sera from 18 patients and single convalescent sera from 15 more were also examined at the regional virus laboratory. These specimens were not sent by any routine and merely reflect different diagnostic action by doctors in the practice. Current or recent infection by influenza B in five patients and respiratory syncytial virus in two was revealed, at times when these viruses were prevalent in the community.

Table 2. Main presenting complaints and duration in weeks at first consultation for the episode.

	Weeks					
	−1	−2	−4	−6	−8	−10
Chesty	4	1				
Cold/'flu	10	2	1	1		
Cough and sore throat	4	2	1	1		
Cough	15	14	6	7	1	3
Sore throat	6	1				
Total	39	20	8	9	1	3

Table 3. Duration of main symptoms (weeks).

		Weeks									
Symptom	Total with symptom	1	2	3	4	6	8	12	16	>16	Not recorded
Cough	80			20	11	19	5	8*	8*	6	3
Sore throat	36	9	12	5	4	2	2				2
Vomiting	32	20	5	2	2		2	1			
Malaise	34	5	2	9	3	1	5	4*	1*	4	

*One of four patients who died.

Complications

Four patients are now dead, including the two found to have malignant disease. It is difficult to determine the part played by pertussis in the deterioration of the others. A 45-year-old woman, known to have had cor pulmonale and mental illness, spent 18 months after her pertussis alternating between acute respiratory and psychiatric units until she died of pulmonary emboli. The fourth patient, a hypertensive woman of 65, was admitted to hospital 11 weeks after onset of pertussis with a chest infection and left ventricular failure. She subsequently developed a hemiplegia and died four weeks later.

Another woman, aged 48, developed a hemiplegia in the second month of coughing and, although mobile, she is now incapacitated and cannot work. The only other patient admitted to hospital (twice) was a respiratory cripple with cor pulmonale; she has now recovered from her pertussis. Bronchiectasis has been diagnosed in one elderly woman after outpatient investigation.

Discussion

The symptomatology in this series is similar to that described by Mannerstedt (1934), with symptoms lasting from 24 to over 80 days. His report differs in recording costal muscle pain in half his patients and throat symptoms in the majority. The most striking finding relevant to NHS general practice at the present time was the large proportion consulting early in their illness. Other patients may have come early, been reassured about a simple cough and not returned. They may then have infected others, for the patients were generally unaware of their condition. (Even among the doctors in the practice there was a marked difference in the number of cases detected.)

Second attacks of whooping cough have been reported by many authors but rarely with bacteriological proof. This paper is no exception, although about a quarter gave such a history. The failure of past immunization could be expected because of the lapse of time since last injection (Lambert, 1965) and because the efficacy of some of the vaccines used before 1968 has been questioned (PHLS, 1969).

There is little value in calculating attack rates in one practice, but the national figures (DHSS, 1981) show the highest adult rate in the 25–34 age group, with women in the majority. The female:male ratio of 3:1 in this series equals that found in adults by Stocks (1933). The true incidence of pertussis in adults is unknown, although there have been suggestions that adults constitute a reservoir of infection (Linnemann and Nasenbeny, 1977). Sixty years ago Phillips (1921) wrote, "The prevalent idea among the laity and sometimes among physicians and nurses, that adults seldom contract whooping cough, is responsible for lack of quarantine." This is probably still true today and may be a significant factor in spreading and maintaining an epidemic.

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Words our patients use

"I feel umpty"—I feel out of sorts (South Yorkshire).
"I feel neither lost nor won"—I don't know how I feel (South Yorkshire).
'Towty'—lethargic, or not well (Glasgow).
'Hinging'—pale, wan or listless (Glasgow).
'Guttered'—drunk (Dundee).
'Hangy'—the malaise of an acutely febrile child (South Scotland).
'Marred'—coddled or protected: "He has been marred all his life" (Staffordshire).
'Spail' or 'spale'—splinter (Scotland and Northern England).