Acute labyrinthitis: a possible association with influenza

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SUMMARY. Acute labyrinthitis occurs annually in one in 600 patients, mostly adults in our practice, and lasts for up to two weeks. It may be related to several different viral infections, the commonest of which is influenza A. In an influenza epidemic there was an incidence of the syndrome in one in 100 cases. In the majority of cases there was no demonstrable cause and the aetiology remains speculative. It is suggested that some cases may be associated with viruses as yet unidentified.

Introduction

ACUTE vertigo is a reasonably common presenting symptom in general practice. It usually comprises a syndrome including nausea, vomiting and other predominantly upper respiratory symptoms. It is well described in *Update* (1979):

> "The characteristic clinical features consist of onset of attack on first awakening in the morning or during the night, intense vertigo on raising the head off the pillow and, on attempting to get up, a sensation of falling which, in severe cases, makes it impossible to remain erect, so that the victim may have to crawl on hands and knees. Accompanying symptoms are intense malaise, anxiety and apprehension and nausea and vomiting. Nystagmus may be present but there are no specific signs. The usual course is a gradual and spontaneous improvement over two or three days but with the sensation of vertigo being precipitated by sudden movements of the head for two to three weeks."

The syndrome has been described as epidemic vertigo by Charters (1957) and Pedersen (1959), vestibular neuronitis by Hallpike (1949) and Harrison (1969) and as paroxysmal positional vertigo in *Update* (1979). This perhaps indicates that no-one is quite sure of the exact site of the lesion. I prefer the term 'acute labyrinthitis' as being more comprehensive, and because hearing may be affected.

I became interested in the condition in general practice, and noticed that it seemed to be more common during the winter, especially at the times of influenza epidemics. Walford (1952) and Kuenssberg (1955) described cases of vertigo in association with influenza. Pedersen (1959) had done viral studies with negative results, but had not tested for the influenza virus. He described the association with encephalitis as noted by Poston (1926) and distinguished two types of case, one with predominantly upper respiratory and the other with gastro-intestinal symptoms.

Williams (1963) described rises in Coxsackie antibodies in children with this condition.

I made a preliminary study of 13 cases in 1973 which confirmed the association with an influenza epidemic, and I decided to carry out a more detailed study to try to determine more accurately the cause of the syndrome.

Method

The Practice

I work in a semi-rural practice based in a country town in Hampshire. During the period of the study (1976-79), the number of our patients remained fairly constant at around 8,200. Seventeen per cent of our patients are over the age of 65. We have four full-time male partners, a half-time woman partner and, for the past two years, a trainee.

The patients

I asked all my partners to refer all cases of acute vertigo to me, and I personally saw at least twice all the 50 cases described. I excluded from the study three patients with acute vertigo: the first was a 44-year-old man who subsequently proved to have Ménière's disease; the second was a 17-year-old girl who had a vascular lesion as a result of taking an oral contraceptive; the third was a 75-year-old man who presented with vertigo and an influenzal illness, which proceeded to mild jaundice and progressive renal failure. He was admitted to hospital but died a week later and no definite cause of the illness was found at post-mortem.

One patient appears twice, as case numbers 12 and 47.

Her second attack proved to be associated with rubella (antibody titre 1/1,280). There was no rash but she did have the usual symptoms of arthritis. Another patient had a very mild recurrence which only lasted a few days and was associated with an upper respiratory tract infection.

Forty-eight of the patients are still in the practice; one moved and the other died. The latter had psittacosis with vertigo as the presenting symptom. His first antibody titre (1/320) was to hand when he developed chest signs, and so I was able to treat him at once with tetracycline. So far I have known of no other recurrences.

History

I noted the patients' age, sex and exact date of onset of symptoms. The criterion for inclusion was the acute onset of rotational disequilibrium, with symptoms lasting at least two days. I noted the presence or absence of nausea, vomiting, diarrhoea, headache, coryza, deafness and tinnitus.

Examination

There are few physical signs in this syndrome. The only two noted consistently were fever (over 37°C) and nystagmus. In a few patients I noted a slight pinkness of the ear drum but none of the patients proceeded to acute otitis media.

Investigations

Initially I took swabs for virus culture from all the patients. If the symptoms were mostly upper respiratory I took a throat swab and if gastro-intestinal, a rectal swab. I also tried to take two paired sera for viral antibody studies at 10 to 14 days' intervals. The micro-organisms tested in the laboratory at Winchester were as follows:

Influenza A	C. burnettei (Q)
Influenza B	Psittacosis/LGV
Influenza C	Herpes simplex
Parainfluenza	Measles
Mumps S	Coxsackie B
Mumps V	*Mycoplasma pneumoniae*
Respiratory syncytial virus	Leptospira
Adenovirus	

Results

These are summarized in the Table.

Sex

There were 26 female and 24 male patients.

Age

The range was five to 80 years, with a median of 42.5 and an average of 45.7 years. There were only two children in the series.

Incidence

There were 50 cases in three and a half years. This gave an annual incidence of 14 in our 8,200 patients, or approximately one in 600. The National Morbidity Survey in 1970–71 (OPCS, 1974) gives 7.6 per 1,000 as the annual consulting rate for vertigo.

There was a distinct association with the time of year: excluding one influenza case, only 10 patients presented in the six months of April to September inclusive.

Duration

The average was the two weeks described by most observers, with a maximum of four months in one patient. This woman and one other were referred for an ENT opinion, which confirmed our diagnosis.

Symptoms

These also are summarized in the Table. Nausea was almost invariable and headache and vomiting were very common. Symptoms referable to the ear occurred in a quarter, but diarrhoea was uncommon. One patient complained spontaneously of hyperacusis. The place where the patient was first seen gives an approximate indication of the severity of the symptoms: the majority were seen at home, indicating that this is an acute, disabling and indeed alarming condition.

Signs

Thirteen patients had fever when I saw them, but others may have had it at other times in the course of the illness. Similarly, 20 patients had nystagmus; the earlier they were seen the more likely it was to be noticed.

Virology

I abandoned my attempt to isolate viruses after the first 20 or so patients, as I had no positives even in those where infection was proved by antibody studies. I felt that the trouble and expense were unjustifiable. I was able to get serial antibodies on 43 patients, with the 12 positive results noted. A positive result was one in which a fourfold rise in antibodies occurred, or where there was a single titre of at least 1/320. I did not think it justifiable to take blood from the two children, and others were excluded because I was unable to get a second specimen. Five patients had clinical influenza (fever, malaise, myalgia and cough of acute onset) but no definite viral proof of the illness.

Results and viruses identified.

Number	Sex	Age	Duration (days)	Nausea	Vomiting	Diarrhoea	Headache	Coryza	Deafness	Tinnitus	Fever	Nystagmus	Home or surgery	Virus isolation	Virus agglutination	Agglutination results
1	F	33	7	+	O	O	+	+	O	+	+	O	S	O	+	Influenza A
2	F	35	14	+	+	O	+	O	O	+	O	O	H	O	O	
3	F	60	7	+	+	O	+	+	O	O	+	+	H	O	—	Clinical influenza
4	M	64	4	+	+	O	+	+	O	O	+	O	H	O	+	Influenza
5	F	34	4	+	O	O	+	+	O	O	O	O	S	O	—	
6	F	18	14	+	+	O	+	O	O	O	O	+	S	O	+	Adenovirus
7	F	55	5	+	+	+	O	O	O	O	O	O	S	O	+	Mumps
8	M	48	4	+	+	O	+	O	O	O	O	+	H	—	—	
9	M	32	7	+	+	O	+	+	O	O	+	O	H	—	O	
10	M	55	14	+	O	O	+	O	O	O	O	+	H	O	O	
11	F	21	14	+	O	+	O	O	O	+	O	+	S	O	O	
12	F	53	14	+	O	O	+	O	O	+	O	O	S	O	O	
13	F	58	2	+	O	O	O	O	O	O	O	O	H	O	O	
14	M	45	3	+	+	+	O	O	O	O	O	+	H	O	O	
15	F	43	90	+	+	O	O	+	O	O	O	O	H	O	O	
16	M	59	14	+	O	O	+	O	+	+	O	+	S	O	O	
17	F	49	21	+	+	O	O	O	O	O	O	O	H	—	O	
18	M	30	14	+	O	O	+	O	O	O	O	+	S	—	O	
19	M	5	2	+	+	O	O	+	O	O	O	O	H	—	—	
20	F	30	14	+	+	+	+	O	O	O	O	+	H	—	O	
21	M	11	2	+	O	O	+	+	O	O	O	O	H	O	—	
22	M	65	14	+	+	O	+	O	+	O	O	O	S	—	+	Parainfluenza
23	M	63	21	O	O	O	+	+	+	O	O	O	S	—	+	Psittacosis
24	M	37	14	O	O	O	+	+	+	+	+	O	H	O	O	Clinical influenza
25	M	39	120	+	+	O	+	O	O	+	O	O	S	—	—	
26	M	39	14	+	O	O	O	O	O	O	O	+	S	—	O	
27	M	32	14	+	O	O	+	+	O	O	+	O	S	O	O	Clinical influenza
28	F	26	30	+	+	O	+	O	O	O	+	O	H	—	+	Influenza A
29	F	28	14	+	O	O	+	O	O	O	O	+	S	—	O	
30	M	72	4	+	+	O	O	O	O	+	O	+	H	—	O	
31	M	59	5	+	+	O	+	+	+	O	O	O	H	—	O	
32	F	56	30	+	+	O	O	O	+	+	O	+	H	—	O	
33	F	21	4	+	+	O	+	+	+	O	O	+	S	—	O	
34	F	33	6	+	O	O	O	O	O	O	O	+	S	—	O	
35	F	71	8	O	O	O	O	O	O	O	O	+	H	—	O	
36	M	19	4	+	+	O	+	O	O	O	+	+	H	—	—	Clinical influenza
37	F	64	3	+	O	O	+	O	O	O	+	O	H	—	+	Influenza A
38	M	71	10	+	+	O	+	O	+	+	+	O	H	—	+	Influenza A
39	F	38	21	+	+	+	+	O	O	O	O	O	S	—	+	Adenovirus
40	F	80	10	+	+	+	O	O	O	O	O	O	H	—	O	
41	F	38	7	+	O	O	+	O	+	O	+	O	H	—	+	Influenza A
42	F	46	10	+	O	+	+	O	+	+	+	O	S	—	O	
43	F	43	7	+	+	O	+	O	O	O	O	+	S	—	O	
44	M	61	14	+	+	O	+	+	+	O	O	+	H	—	O	
45	M	30	14	+	+	O	O	O	O	O	O	O	S	—	O	
46	F	57	7	+	O	+	+	O	O	+	O	O	S	—	O	
47	F	55	5	+	O	O	+	O	O	O	+	O	H	—	+	Rubella
48	M	33	4	+	O	O	O	O	O	O	O	O	H	—	O	
49	M	47	2	+	O	O	+	O	O	O	O	+	H	—	O	
50	M	24	7	+	+	O	+	O	O	O	O	O	H	—	O	
F:26 M:24		45.7 (av.) 42.5 (med.)	14	47	27	8	35	14	11	12	13	20	H:29 S:21	Nil	12	Totals

\+ = present or positive
O = absent or negative
— = not done

Infectivity

This appeared to be extremely low. There was one instance of a mother whose son developed the same symptoms a week later. One husband and wife were affected, but with an interval of over a year.

Discussion

In this study six viral or rickettsial agents were found to be associated with this syndrome, with influenza A by far the commonest. It is possible that 12 (nearly 25 per cent) of all the cases were connected with influenza or

parainfluenza. Everett (1977) reported an extremely interesting study of nearly 300 cases of clinical influenza in his practice in Plymouth, in which he could find definite proof of a viral cause in only 25 per cent. It is therefore possible that more of these cases may have been related to viruses as yet undefined. It now appears that both acute coryza and acute gastro-enteritis are associated with viruses which are just being recognized. Other common causes of acute vertigo such as migraine and vertebro-basilar insufficiency are unlikely because of the patients' age, duration of symptoms and absence of recurrence. A viral cause is suggested by an isolated incident of acute onset, lasting about two weeks, and in which two cases occasionally occur in one household. The incidence in the winter months supports this suggestion. I think that acute labyrinthitis may be analogous to acute rhinitis or acute conjunctivitis, being a non-specific syndrome associated with a number of different viruses.

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