LETTER

Clinical outcomes of pandemic (H1N1) 2009 influenza (swine flu) in adults with cystic fibrosis

Patients with cystic fibrosis (CF) suffer recurrent bacterial pulmonary infections, but viral infections can also cause acute clinical deterioration.[1] Certain patient groups suffer increased morbidity following pandemic (H1N1) 2009 influenza (swine flu),[2] but there are few previous reports of outcomes in individuals with CF.[3 4] The West Midlands, along with Greater London, has had the highest incidence of H1N1 influenza in the UK.[5] We therefore examined the outcomes of patients diagnosed with H1N1 influenza at the West Midlands Adult CF Centre.

From June 2009 to April 2010 all adults with CF at our regional centre with potential H1N1 influenza had nasopharyngeal swabs tested by PCR. PCR testing was instituted in patients with fever >38°C together with one or more of the following: sore throat, rhinorrhoea, loose bowel motions, myalgia and headache. We documented clinical management, as well as lung function and body mass index (BMI) at the visit prior to their febrile illness and at their subsequent clinic visit. We used paired and unpaired Student t test and Mann–Whitney U test as indicated.

Out of our total patient population of 325 adults with CF, 45 patients had nasopharyngeal swabs tested by PCR over the study period. Thirteen patients (4% of our patient population) tested positive ('H1N1 +ve' group) and 32 patients (9.8%) tested negative for H1N1 influenza ('H1N1 −ve group'). In three of the 'H1N1 −ve' group, PCR was positive for alternative viruses (1 adenovirus, 1 parainfluenza type 4, and 1 herpes simplex type 1).

There were no statistically significant differences in baseline clinical characteristics between the two groups (table 1). Presenting symptoms in the 'H1N1 +ve' group were: fever >38°C (13/13 patients), increased sputum production (13/13), sore throat (8/13), myalgia (5/13), nausea/vomiting (5/13) and headache (2/13). Fever, increased sputum production, nausea/vomiting and headaches were similarly common in the 'H1N1 −ve group'; however, none of the patients in the 'H1N1 −ve group complained of sore throat or myalgia. Blood test results showed a trend towards lower total white cell count and C-reactive protein (CRP) in the 'H1N1 +ve' group compared with the 'H1N1 −ve' group. All patients initially received antibiotics and oseltamivir, and in 'H1N1 +ve' patients oseltamivir was continued for a median of 10 days. Nine of the 13 patients in the 'H1N1 +ve group' required hospital admission, but there were no differences in duration of hospital admission or requirement for antibiotics between the two groups. There were no statistically significant differences in clinical outcomes between the 'H1N1 +ve' and 'H1N1 −ve' groups. In both the 'H1N1 +ve' and 'H1N1 −ve' groups there was a non-significant decrease in FEV_1 (forced expiratory volume in 1 s) % predicted, FVC (forced vital capacity) % predicted (table 1) and BMI. None of the patients in the 'H1N1 +ve' group had new changes on their chest radiograph or required ventilatory support.

In our experience, adults with CF have generally experienced a relatively mild illness as a result of the first influenza pandemic of the 21st century. However, the CF community is well aware of the potential implications of a subsequent more virulent pandemic in future years.

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REFERENCES

1. **Wat D,** Gelder C, Hibbitts S, *et al*. The role of respiratory viruses in cystic fibrosis. *J Cyst Fibros* 2008;**7**:320–8.
2. **Jain S,** Kamimoto L, Bramley AM, *et al*. Hospitalized patients with 2009 H1N1 influenza in the United States, April–June 2009. *N Engl J Med* 2009;**361**:1935–44.
3. **Whitaker P,** Etherington C, Denton M, *et al*. A/H1N1 and other viruses affecting cystic fibrosis. *BMJ* 2009;**339**:b3958.
4. **France MW,** Tai S, Masel PJ, *et al*. The month of July: an early experience with pandemic influenza (H1N1) in adults with cystic fibrosis. *BMC Pulm Med* 2010;**10**:8.
5. Pandemic (H1N1) 2009 in England: an overview of initial epidemiological findings and implications for the second wave, 2009. http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1258560552857.

Table 1 Patient characteristics and lung function data

	Age, median (range)	Male, n (%)	Chronic *Pseudomonas* airway infection, n (%)	CF-related diabetes, n (%)	CF liver disease, n (%)	Transplant recipient, n (%)	FEV_1 % predicted prior to presenting illness, mean±SD	FEV_1 % predicted following presenting illness, mean±SD	FVC % predicted prior to presenting illness, mean±SD	FVC % predicted following presenting illness, mean±SD
'H1N1 +ve' group (n=13)	22 (17–48) years	6 (46.2%)	13 (100%)	7 (53.8%)	6 (46.2%)	3 (23.1%)	51.4±18.3%	46.5±16.7%	67.4±17.9%	64.0±19.9%
'H1N1 −ve' group (n=32)	26 (15–59) years	15 (46.9%)	31 (96.9%)	24 (75%)	6 (18.8%)	3 (9.4%)	50.7±20.9%	49.8±19.5%	66.4±23.4%	65.0±20.9%

CF, cystic fibrosis; FEV_1, forced expiratory volume in 1 s; FVC, forced vital capacity.