Rapid communications

Epidemiologic analysis of the laboratory-confirmed cases of influenza A(H1N1)v in Colombia

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From 2 May to 16 July 2009, a total of 183 laboratory-confirmed cases of influenza A(H1N1)v were reported in Colombia, 117 (63.9%) of these had travelled outside the country. Hospital admission was necessary in 26 (14.21%) cases and seven patients died (fatality-case ratio: 3.8%). The infection affected younger age-groups and the symptoms most frequently reported were cough, fever and sore throat. Our findings are consistent with recent reports from other countries.

Background

Since the first human cases of influenza A(H1N1)v were identified in Mexico and the United States, a rapid spread of this infection has been observed across the world [1,2]. On 11 June 2009, the World Health Organization declared influenza pandemic [3]. On 24 April 2009, the Colombian public health authorities implemented the National Plan for Prevention and Control of Pandemic Influenza and they reported the first cases in travellers including a group of athletes returning from a sporting event in Orlando, United States. This paper describes the main demographic and clinical characteristics of the first cases of influenza A(H1N1)v in Colombia reported during the period from 2 May to 16 July, 2009.

Methods

A suspected case was initially defined as a patient with acute respiratory symptoms and a history of travel to Mexico, United States or any other affected country within seven days before the onset of symptoms or a history of close contact with a confirmed or probable case. However, this definition has been updated due to the rapid spread of infection and the presence of laboratory-confirmed cases in patients who had not travelled outside the country. The current definition of suspected case includes history of travel in any affected country or acute respiratory illness requiring hospitalisation. A probable case is defined as an individual with an acute febrile respiratory illness who is positive for influenza A but classified as undetermined for the new virus by using a specific Real Time-PCR (rRT-PCR) from CDC (protocol reference: I-007-005). A confirmed case is defined as a patient with acute respiratory symptoms who tested positive for influenza A(H1N1)v using the specific rRT-PCR. In a few patients, the presence of the virus was confirmed by gene sequencing [4,5].

Demographic, clinical, and epidemiologic data of patients meeting these criteria for surveillance were sent to the National System of Public Health Surveillance (SIVIGILA) by public and private hospitals. This information was validated using photocopies of the clinical records if they were available and face-to-face or telephone interviews of the patients (or their families) who were diagnosed as having the infection. Respiratory samples by throat swabs from patients with respiratory symptoms who had been defined as suspected cases of this virus were tested by rRT-PCR. In some of the patients who died, tissue samples (lung, trachea and bronchia) were also collected and analysed. Additionally, in a few patients, direct immunofluorescence (DIF) test has also been used in order to evaluate concomitant infection of other respiratory viruses such as seasonal influenza A or B virus, respiratory syncytial virus, parainfluenza virus (1, 2 and 3) and adenoviruses.

Categorical variables were presented as percentages and Pearson´s or Fisher's exact tests were employed to compare groups. Quantitative variables were statistically tested for the normality of distribution by using the Shapiro-Wilk test. A non-normal quantitative variable was summarised as median and interquartile range (IQR) and two median were compared using the Wilcoxon rank-sum test. P-values less than 0.05 were considered as statistically significant.

Figure 1

Number of laboratory-confirmed cases of influenza A(H1N1)v by week of onset and history of travel, Colombia, reported 2 May - 16 July 2009 (n=182*)
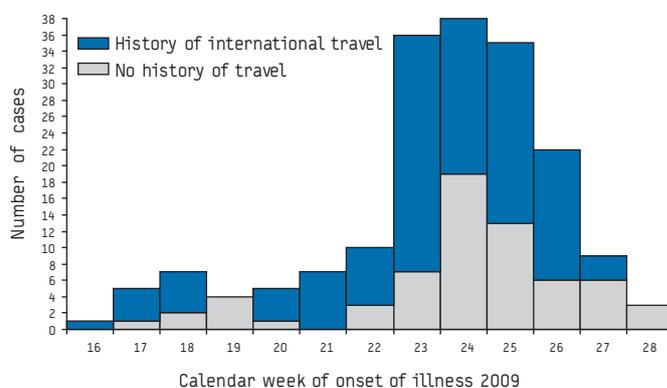
Note: The first patient was a woman returning from Mexico whose onset of symptoms was on 14 April (week 16).
*One patient (in week 23) was excluded because of unknown history of travel.

Results

On 2 May 2009, the first confirmed Colombian case of influenza A(H1N1)v was reported. By 16 July, 183 cases have been confirmed (including four cases confirmed by gene sequencing). Of these, 96 (52.4%) were men. The distribution of cases by week of onset of symptoms is shown in Figure 1. A history of travel outside the country was found in 117 (63.9%) patients, most of them had travelled to United States (n=71), Argentina (n=12), México (n=7) and Chile (n=7). In 65 (35.5%) confirmed cases there was no history of travel outside Colombia and for one patient this information was not available. The majority of cases were from the provinces of Bogotá, Valle, Antioquia and Atlántico.

The median age of cases was 27 years (IQR: 17-38). Cases ranged in age from 0 to 72 years and 80% of cases were aged less than 40 years. There were no differences in the median of age of cases by sex (women: 28 years; IQR: 18-39; men: 25 years, IQR: 16.5-36.5; p=0.24). The distribution of laboratory-confirmed cases of influenza A(H1N1)v by age group and history of travel is shown in Figure 2.

The clinical manifestations are listed in the Table. Headache and shortness of breath were observed more frequently in women than in men, but these differences were not significant. The symptoms most frequently reported included fever, cough, sore throat, nasal discharge and headache (n=78; 84.8%).

Twenty six patients (14.2%) were admitted to hospital because of complications. Patients who experienced shortness of breath were more likely to be hospitalised than those without this symptom (28.4% and 2.1%, respectively; p<0.001) while patients who reported headache were less likely to be hospitalised (p=0.031). Seven patients who were hospitalised died, including five women. Only two of the fatal cases had underlying medical conditions, including obesity (n=1) and underweight (n=1). The case-fatality ratio was 3.8%.

The medical complications related to hospitalisation and deaths were acute respiratory failure, pneumonia, hypoxia, pneumothorax, acute tracheitis, tracheobronchitis and sepsis. No influenza A(H1N1)v-related deaths have been reported in pregnant women.

The analysis of the first eight cases who have also been tested for other respiratory viruses showed coinfection of influenza A(H1N1)v with parainfluenza type 1 and influenza B viruses in one patient, and with parainfluenza type 3 virus in another patient, while the remaining six were negative.

Discussion

Our results show that 35% of laboratory-confirmed cases had no history of travel outside the country which is an evidence of local transmission. Data also suggest that young people were affected more often than older people. It is very noticeable that the proportion of people younger than 40 years of age among the first 40 cases reported was the same as in the dataset analysed here (80%) but, in the rest of the cases, the infection has expanded the age range from 40-54 to 40-72 years.
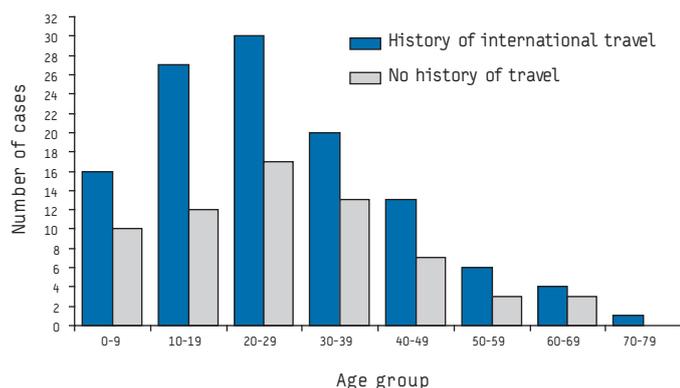
*One patient who was nine years old was excluded because of unknown history of travel

Symptoms	Female		Male		Total		p-value
	Cases	%	Cases	%	Cases	%	
Fever (n=180)	75	87.2	78	82.9	153	85.0	0.427
Cough (n=181)	84	96.5	92	97.8	176	97.2	0.672*
Sore throat (n=177)	65	76.4	68	73.9	133	75.1	0.694
Headache (n=177)	67	78.8	61	66.3	128	72.3	0.063
Myalgia (n=177)	49	57.6	58	63.0	107	60.4	0.463
Shortness of breath (n=178)	44	51.1	37	40.2	81	45.5	0.175
Nasal discharge (n=176)	63	74.1	63	69.2	126	71.5	0.473
Malaise (n=173)	25	30.1	24	26.6	49	28.3	0.614
Conjunctivitis (n=176)	9	10.7	11	11.9	20	11.3	0.795
Diarrhea (n=180)	6	7.2	4	4.4	10	5.7	0.523*

Note: n indicates the number of cases who provided information on the particular symptom. Three children aged less than one year were discarded for calculating the proportion of symptoms related to pain and malaise.
*Fisher´s test was used.

The age distribution of cases was similar to that observed by researchers in other countries [6,7]. Our number of confirmed cases is relatively low and we were unable to find any significant differences between sexes. Clinical manifestations reported by our patients were similar to those described by other authors [7,8].

The majority of fatal cases had no underlying medical conditions. Obesity has recently been considered as a possible risk factor for severe disease [9]. This condition was found in one of the fatal cases. Finally, we considered that one reason for the relatively high case-fatality ratio observed in this dataset is that we took into account only the laboratory-confirmed cases.

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