Epidemiological Report of confirmed and suspicious cases of influenza A (H1N1) at the Clinica Internacional during 2013

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ABSTRACT

Introduction: Influenza (flu) has great significance due to its epidemiological behavior, morbidity and mortality. **Methodology:** Retrospective epidemiological study of all the positive and negative cases of the PCR analysis for Influenza type A (H1N1) during 2013, in our institution. **Results:** Influenza cases increased in July. From the 25 cases studied, 11 were positive; the average age of patients was 46.5 years old and they were mainly men (63.6%). When comparing symptoms in both positive and negative cases, differences were found among sore throat (24% and 56%), breathing problems (24% and 4%) and general malaise (4% and 40%, respectively). Patients with positive results stayed long in the Intensive Care Unit (ICU), more hospital days and more use of mechanical ventilator. **Conclusions:** In both groups, cases with sever symptoms were found, but, mainly, in positive cases of Influenza A (H1N1). This study provides important clinical-epidemiological information on confirmed and suspicious cases of influenza in our institution.

Key Words: Epidemiology. Influenza type A (H1N1). Orthomyxoviridae. PCR Real Time.

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INTRODUCTION

Influenza (flu) is one of those pathologies whose epidemiological behavior continuously concern health authorities around the world; because of its easy spreading and morbidity and mortality rates (the latter may be produced on determined groups of risk).

Causal agents are influenza viruses belonging to the family of *Orthomyxoviridae*, within which the virus influenza type A (H1N1) is found, showing the greatest antigenic variability , and it is the responsible agent of most of the large pandemics of influenza historically recorded: Spanish influenza (1918-1919)[2], Russian Influenza (1977-1978) , and the pandemic started in México in 2009[4,5].

Infection by influenza damages the superficial mucous layer of the respiratory tract, and, when it affects the lower respiratory tract, it becomes susceptible to invading bacteria, specially streptococcus, staphylococcus, and *Haemophilus influenzae*. There is cell death and desquamation caused by the viral replication, as well as edema and mononuclear infiltration; cytokine levels (IL-6, interferon-alpha, tumor necrosis factor) are high in lungs of animals with influenza A (H1N1)/09[6].

Symptoms caused by influenza could be minor (headache, shiver, and dry cough,) or very severe (high fever, muscle aches, anorexia, lack of air), according to the risk factors in certain people: lung, kidney and heart problems, diabetes or cancer; likewise, it is more often serious in young children and old people.

This report is aimed to describe the cases of respiratory disease caused by (or with probable diagnosis) influenza A (H1N1), or the cases of influenza-like illness observed by the *Clínica Internacional* in Lima, Peru, during 2013.

METHODOLOGY

A retrospective study was carried out from the records of the *Clinica Internacional* in Lima, Peru.

POPULATION

Inpatients or outpatients diagnosed with respiratory disease caused by influenza A (H1N1) during 2013, and registered in the *Clinica Internacional* of Lima-Peru. The patients came from outpatient care, emergency service, hospitalization or Intensive Care Unit (ICU).

DATA COLLECTION AND SAMPLING

The information was searched from the record kept in the system area of the institution, where all the information of patients attended in this institution is concentrated (diagnosis, headquarters, month, year, and doctor) (See Table 1).

Table 1. Diagnosis considered for selecting cases.

CIE	Description
J10	Influenza due to identified influenza virus
J100	Influenza with pneumonia, due to identified influenza virus
J101	Influenza with other respiratory symptoms, due to identified influenza virus
J108	Influenza, with other symptoms, due to identified influenza virus

VARIABLES

Definition of cases, clinical diagnosis, laboratory diagnosis, radiology diagnosis, classification of cases, initial symptoms, severity, distribution of cases according to time, place, person, and others.

From medical records, demographic data, symptoms and entry signs, evolution, days of hospitalization, days in ICU, treatment, diagnostic imaging, were obtained.

Nasopharyngeal swab was obtained in all the cases of influenza-like illness, defined according to care standards of the *Clinica Internacional*.

LABORATORY DIAGNOSIS

Influenza A (H1N1)

Real Time ready Inf. A / H1N1 Detection Set (Roche Diagnostic), detection of influenza A (H1N1) by polymerase chain reaction (PCR) Real Time. The swab was kept at 2 - 4 ° C in the institutional laboratory and then it was transferred to the Nutrition Research Institute - *Universidad Peruana de Ciencias Aplicadas (IIN-UPC)*. The case was diagnosed by the presence of positive

PCR result for influenza A. Samples were processed in the laboratory of *IIN-UPC;* no culture was made. The following primers were used to amplify H1 influenza A virus: primers for M2 (for detection of influenza A) and primers H1 (for detection of Influenza A H1N1).

RADIOLOGY DIAGNOSIS

A chest X-ray, reviewed and reported by a radiologist, was made in all patients with influenza-like illness and clinical suspicion of pneumological complication.

Where there was radiological, analytical (gas analysis or oxygen saturation), or clinical evidence of deterioration of respiratory symptoms, a high resolution computed tomography of the lungs was performed.

STATISTICAL ANALYSIS

Data were entered in a database created in Microsoft (MS) Excel 2010, and were analyzed using PivotTables. Categorical variables were compared using the Fisher's exact test.

ETHICAL MANAGEMENT

Obtaining the nasal swab was considered within the standard care of the patient in this institution. Case management was not nominal but strictly confidential.

RESULTS

25 medical records which are unique were reviewed. These ones register emergencies, hospitalization, ICU and previous care. Table 2 shows characteristics of the patients studied. From the 25 cases, 11 were confirmed (44%) by positive PCR of nasopharyngeal swab for influenza A (H1N1) virus. In Figure 2, all the cases are described over the time, i.e. during 2013; information regarding initial symptoms of the patients was collected (see Table 3), evolution and level of attention of every case (see Table 4). Another important result was that most of the patients with negative PCR result had a great variety of diagnoses related to musculoskeletal problems.

DISCUSSION

From the 25 cases reported, 11 (44%) were positive PCR for influenza A (H1N1), a high value when compared with other reports where the percentage is around 20%[7,8]. The great majority of cases reported are concentrated between late June and early August. When comparing both groups (positive and negative), symptomatology is similar; it varies in the presence of sore throat and general malaise. These symptoms mainly occur in cases with negative PCR; and the most severe cases are in the PCR (+) group. The more severe cases were previously reported and published. [9] 18.2% of confirmed cases required mechanical ventilator, similar to that reported by A. Mehta et al. In our series, almost all the cases were patients who firstly came to the institution. Although our report does not include a large number of cases, it allows us to quantify important aspects of this pathology.

As it can be seen in the results, confirmed cases of influenza A (H1N1) show major clinical complication, making necessary to present the most important characteristics of this condition in order to obtain more knowledge for a better case management.

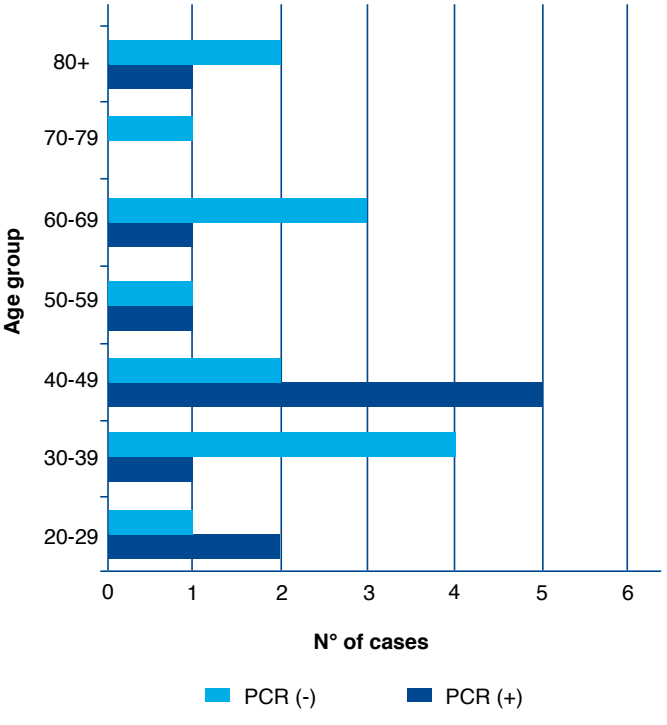

Figure 1. Number of cases according to PCR results for influenza A (H1N1), according to age groups.

Table 2. Demographic data of the patients studied. This table is sub-divided according to PCR results for influenza A (H1N1).

	PCR (+)		PCR (-)		*p*
N° of patient	11		14		
	Mean ± D.S.	**Mín. - Max.**	**Mean ± D.S.**	**Mín. - Max.**	
Age	46.5 ± 16.7	24 - 84	52.1 ± 20.8	23 - 86	
	%	**n**	**%**	**n**	
Female	36.4	4	42.9	6	NS
Origin					
Lima	90.9	10	100	14	
Huancayo	9.1	1			
Race: mestizo	100	11	100	14	

Table 3. Symptoms of patients (at the beginning of the table) with a clinical diagnosis of flu by influenza are shown. This table is sub-divided according to PCR results for influenza A (H1N1).

	PCR (+)		PCR (-)		*p*
Symptoms	**%**	**n**	**%**	**n**	
Fever	40	10	14	56	NS
Cough	36	9	10	40	NS
Nasal congestion	36	9	8	32	NS
Sore throat	24	6	14	56	0.009
Breathing problems	24	6	1	4	0.021
Headache	20	5	6	24	NS
Coughing up	12	3	1	4	NS
Bloody sputum	12	3	0	0	NS
Vomiting	8	2	0	0	NS
Nauseas	4	1	1	4	NS
General Malaise	4	1	10	40	0.004

Table 4. Use of medical services by patients diagnosed with influenza, according to PCR result.

	PCR (+)		PCR (-)		*p*
	%	**n**	**%**	**n**	
Emergency	90.9	10	92.9	13	NS
Hospitalisation	63.6	7	57.1	8	NS
ICU	27.3	3	7.1	1	NS
Ventilator	18.2	2	7.1	1	NS
	Total	**Mean**	**Total**	**Mean**	
Days in hospital	55	7.9	42	5.3	
Days in ICU	43	14.3	14	14.0	

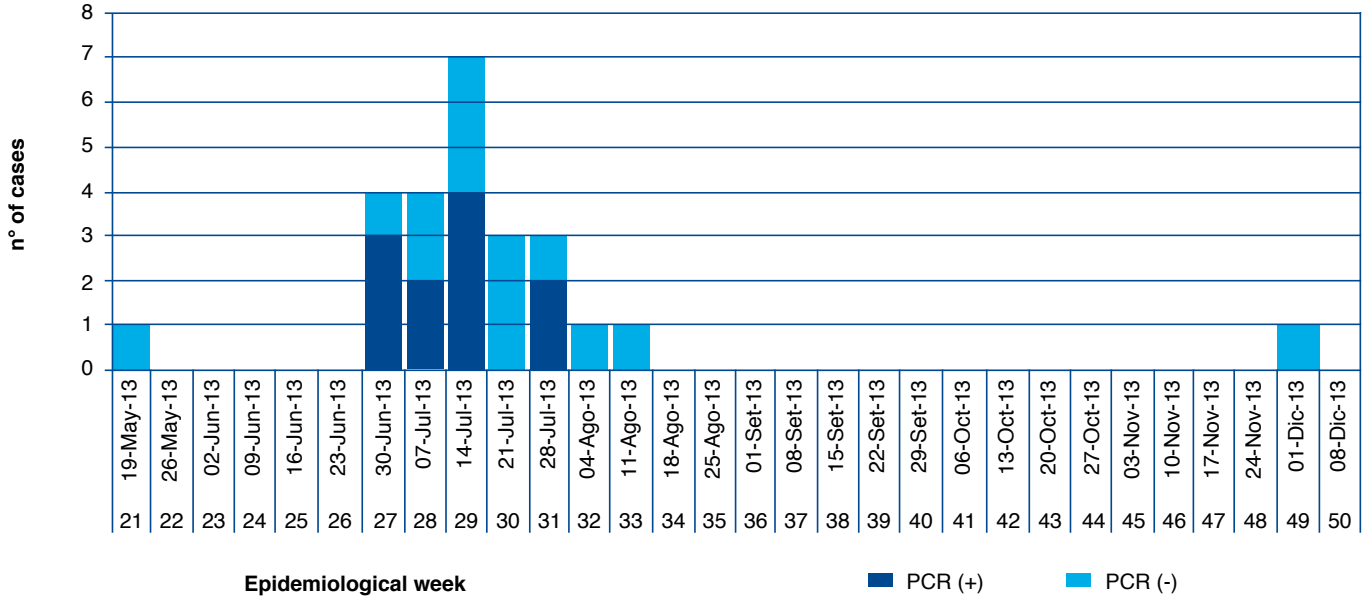

Figure 2. Number of confirmed cases (PCR +) of influenza A (H1N1); and suspicious cases (PCR -); according to epidemiological week 2013.

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CONFLICTS OF INTEREST

The authors report no conflict of interest regarding this manuscript.

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