

# RARE POSITIVE LABORATORY TESTS FOR THE PRESENCE OF INFLUENZA VIRUS A/H1N1-2009 IN MAY, JUNE, JULY, 2011, IN THE DISTRICTS OF KOŠICE I–IV AND SURROUNDINGS OF KOŠICE IN THE SLOVAK REPUBLIC

## RAPID COMMUNICATION

Jana Seligová<sup>1</sup>, Anna Belyová<sup>1</sup>, Andrea Čulmanová<sup>2</sup>, Vladimír Oleár<sup>3</sup>, Lýdia Čisláková<sup>2</sup>

<sup>1</sup>Regional Public Health Authority in Košice, Košice, Slovak Republic

<sup>2</sup>Faculty of Medicine UPJŠ in Košice, Košice, Slovak Republic

<sup>3</sup>Slovak Medical University in Bratislava, Bratislava, Slovak Republic

### SUMMARY

Influenza illnesses and positive laboratory tests for the presence of influenza virus in recent years in the districts of Košice I–IV and surroundings have only occurred during the winter season. In May to July 2010 only one positive laboratory test for the presence of influenza virus A/H1N1-2009 was reported. In 2011, during the same period, a total of 29 positive laboratory tests were recorded for the presence of influenza virus A/H1N1-2009 in individuals with typical clinical symptoms of influenza. Of 29 clinical cases, 27 were diagnosed as influenza and 2 as SARI; 4 cases involved children.

**Key words:** influenza, virus, summer

**Address for correspondence:** J. Seligová, Regional Public Health Authority in Košice, Ipeľská 1, 040 11, Košice, Slovak Republic. E-mail: ke.seligova@uvzsr.sk

### INTRODUCTION

In the Slovak Republic (SR), influenza surveillance has been carried out regularly since 1954, when Slovakia joined the Global WHO influenza surveillance program. The aim is an early detection of epidemic or pandemic influenza and rapid containment and identification of new variants or subtypes of influenza virus in order to prepare relevant vaccines (1–2). Influenza season in the northern hemisphere is the period from October 1 to April 30 the following year. During this period has the highest incidence of acute respiratory infections, including influenza and influenza-like illnesses peaks and the majority of positive laboratory tests for the presence of influenza virus are reported (3) with no positive laboratory tests recorded during summer season (May–August). Laboratory tests for all cases of infection are not feasible (many patients do not seek medical treatment) and would be of no use for surveillance purposes. Biological material from patients is collected by first-contact physicians and doctors in hospitals, with relevant follow-up of cases requiring hospitalization (4). During the 2002/2003 influenza season in the Slovak Republic, biological material from patients with influenza was collected by sentinel physicians throughout the year to secure monitoring of influenza viruses circulating in the population.

### MATERIAL AND METHODS

Influenza illnesses and positive laboratory tests for the presence of influenza virus in recent years in the districts of Košice I–IV and

surrounding area have occurred only during the winter. In 2010, the first positive laboratory test for presence of influenza virus outside the influenza season was reported (A/H1N1-2009, July, positive travel history). In July 2011, at the end of the 2010/2011 influenza season, 29 positive laboratory tests for the presence of influenza virus A/H1N1-2009 were confirmed by real-time PCR method, along with 6 positive isolations of influenza virus on MDCK cell cultures. Nasopharyngeal swabs were collected from 26 patients, pharyngeal washings from 2 patients and nasal secretions for virological tests from one child. Swabs were put into containers with viral transport medium – medium 199 with 0.5% BSA and antibiotics Penicillin G, streptomycin, amphotericin, gentamicin (WHO 2002) supplied by the laboratory (5, 6). Mortality from influenza in that period was very low.

Laboratory tests in the districts of Košice I–IV and surroundings were carried out by the virological laboratory of the Regional Public Health Authority in Košice.

### RESULTS

A total of 29 positive laboratory tests for the presence of influenza virus A/H1N1-2009 from biological material of patients with suspected influenza was recorded from May 5 2011 – July 31 2011, involving 10 cases in May, 9 in June and 10 in July (Table 1).

In total, 27 patients were diagnosed with influenza and 2, both males, with SARI (Severe Acute Respiratory Infection). The case of one 58 year old patient man was fatal: primary symptoms,

**Table 1.** Influenza and SARI in the districts of Košice I–IV and surroundings of Košice May 1 to July 31, 2011, by month

District/month	May		June		July		Total	
	Flu	SARI	Flu	SARI	Flu	SARI	Flu	SARI
Košice I–IV	8	0	4	0	5	1	17	1
Košice surroundings	2	0	4	1	4	0	10	1
Total	10	0	8	1	9	1	27	2

**Table 2.** Influenza and SARI in the districts of Košice I–IV and surroundings of Košice from May 1 to July 31, 2011, by gender

District/gender	Men		Women		Total	
	Flu	SARI	Flu	SARI	Flu	SARI
Košice I–IV	3	1	14	0	17	1
Košice surroundings	4	1	6	0	10	1
Total	7	2	20	0	27	2

**Table 3.** Influenza and SARI in the districts of Košice I–IV and surroundings of Košice May 1 to July 31, 2011, by age group

Age group/district	Košice I–IV		Košice surr.		Total	
	Flu	SARI	Flu	SARI	Flu	SARI
0	1	0	1	0	2	0
1–4	0	0	1	0	1	0
5–9	0	0	1	0	1	0
10–14	0	0	0	0	0	0
15–19	0	0	0	0	0	0
20–24	2	0	1	0	3	0
25–34	4	0	2	0	6	0
35–44	3	0	1	1	4	1
45–54	3	0	2	0	5	0
55–64	2	1	1	0	3	1
65+	2	0	0	0	2	0
Total	17	1	10	1	27	2

acute myocarditis, appeared July 5 2011 followed by death on July 14 2011 from cardiogenic shock. A nose-throat swab from real-time PCR was positive for the presence of influenza virus A/H1N1-2009. Cases of disease by gender are presented in table 2.

The age breakdown of cases is presented in Table 3.

### The Clinical Picture

The clinical picture was dominated by high temperatures 40 °C (2 without temperature), fever, chills, headache, muscle or joint pains, dry irritating cough, bronchopneumonia, dehydration, 3 cases diarrhea, 3 cases urosepsis, 1 case precollapse state, 2 cases cardiogenic shock. In one case ARDS (acute respiratory distress syndrome). Influenza virus A/H1N1-2009 was confirmed by real-time PCR in all patients.

### Hospitalization

Severe clinical course resulted in 20 hospitalizations, of which two cases were aged over 65 years. The majority of patients were aged 24–58 years and hospitalized at the University Hospital L. Pasteur in Košice : 8 patients at the Department of Infectology and Travel Medicine, 5 at the Pulmonary Clinic, 1 at the Department of Acute and Intensive Care, 2 at the Eastern Institute of Heart Disease and 4 in the Children's Faculty Hospital in Košice. Length of hospitalization varied from 3 to 38 days (mode 5 days, median 8.2 days). Maximum length, 38 days, of hospitalization was for a patient diagnosed with SARI. Occupational division of patients: 3 health workers (12%), 3 pensioners, 1 maternity leave, 16 other occupations.

### Vaccination

Of 29 patients, only 3 were vaccinated against influenza: a 39 year old health care worker vaccinated in September 2010 (taken

ill May 17, 2011), a 27 year old male vaccinated in November 2010 (taken ill May 22, 2011) and a 23 year old woman vaccinated in September 2010 (taken ill July 12, 2011). Patients had no temperature but reported a slight headache and muscle pains at the beginning of the disease. A slight dry, irritating cough subsided within one month. Bronchopneumonia or pneumonia was not diagnosed, patients were hospitalised.

## DISCUSSION

Since 2009, when the A/H1N1 influenza virus first appeared, there have been many cases of influenza infections with demonstrable A/H1N1-2009 pathogenesis. The positivity of laboratory tests for the presence of influenza virus A/H1N1-2009 in our districts during May, June and July have ranged 8 to 10 per month (and this only in those cases requiring medical help). From the high number of hospitalized patients we see that most cases have a severe clinical course. One recorded case was fatal. The largest number of cases, 15 (55.6%) were in the 25 to 54 years age group. A total of 4 children (14.8%) were taken ill, including an infant aged 11 days. During summer period influenza virus has not been detected in our region. Traditionally, after the winter influenza season epidemic there is decreased morbidity from influenza and influenza-like illness, following on from greatly decreased viral circulation.

Literature sources concerning tropical and subtropical countries show that laboratory confirmed influenza can occur throughout the year with one or two peaks per year. Yearly occurrence then leads to the fact that the cumulative impact is not clear, albeit with visible strain on the health service, school absences etc. as experienced during influenza epidemics (7). Sporadic outbreaks

of disease in our regions are free of deeper impact on public health and do not therefore call for antiepidemic measures.

Vaccination, albeit at a low rate in our group, has proved effective and reduced severity of symptoms, mortality, complication and hospitalization rates in this group (8).

Our results pointed out the importance of influenza causative agents surveillance even during the low influenza occurrence season.

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*Received October 27, 2011*

*Accepted in revised form November 27, 2011*