

Pediatric non-influenza respiratory viruses during pandemic influenza

Necla Akçakaya,^a Ömer Kılıç,^a Yıldız Camcıoğlu,^a Haluk Çokuğraş,^a Kenan Midilli^b

^aDepartment of Pediatrics, Division of Infectious Diseases, Clinical Immunology and Allergy, Cerrahpasa Medical Faculty, Istanbul University, Istanbul, Turkey. ^bDepartment of Microbiology and Clinical Microbiology, Cerrahpasa Medical Faculty, Istanbul University, Istanbul, Turkey. Correspondence: Ömer Kılıç, MD, Pediatric Infectious Diseases, Clinical Immunology and Allergy, Cerrahpasa Medical Faculty, Istanbul University, TR-34098 Cerrahpasa, Istanbul, Turkey. E-mail: omerkilig7@yahoo.com

Accepted 2 March 2011. Published online 13 April 2011.

Keywords Child, influenza (A) H1N1, other respiratory viruses.

To the editor:

A new influenza A strain designated as pandemic H1N1/09 was reported by the World Health Organization in June 2009 and was declared as the first pandemic agent of the 21st century.¹ In Turkey, the Ministry of Health informed the public extensively regarding both the disease and existing vaccination options. The Ministry also prepared services at hospitals in case of a possible outbreak.

Because our clinic was appointed to provide care in the case of a possible outbreak, we wished to determine whether the causative agent in pediatric patients admitted to Istanbul University Cerrahpasa Medical Faculty between November 5, 2009, and March 10, 2010, with flu-like illness was influenza A (H1N1) or other respiratory tract viruses. In our study, influenza A (H1N1) and other respiratory tract viruses (adenovirus, coronavirus 43, coronavirus 229, metapneumovirus, parainfluenza 1-3, respiratory syncytial virus (RSV) A, RSV B, rhinovirus) were investigated by testing 187 nasal and nasopharyngeal secretions, taken from 182 patients, using Multiplex polymerase chain reaction (M-PCR) (Seplex RV 12 ACE Detection; Seegene, Seoul, South Korea). Multiplex PCR was performed using a dual priming oligonucleotide (DPO) system, and the results were analyzed in 2% agarose gel.

The average patient age was 3.22 and the range was 2 months–16 years old. Of a total of 139 samples, 84 samples contained one, 23 samples contained two, and three samples contained three different viruses. The following agents were found from positive samples: influenza A (H1N1) (63/45.3%), parainfluenza 3 (18/13%), rhinovirus (16/11.5%), coronavirus 229 (8/5.8%), RSV A (7/5%), RSV B (7/5%), parainfluenza 1 (6/4.3%), adenovirus (5/3.6%), parainfluenza 2 (5/2.9%), metapneumovirus (4/2.9%), and coronavirus 43 (1/0.7%) (Figure 1). In addition to flu-like illness symptoms, 31.2% of the virus-positive

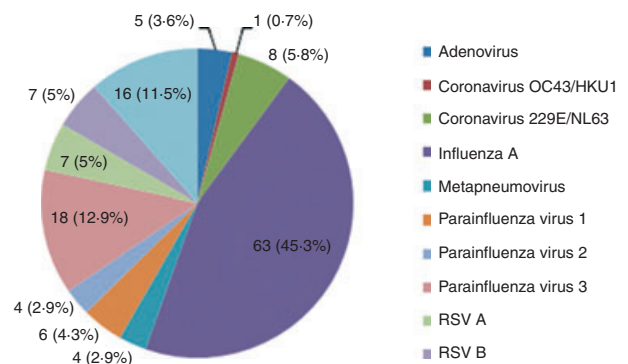


Figure 1. Quantity and frequency of viruses found in nasopharyngeal swab.

patients had findings of bronchiolitis and 6.3% had a previous diagnosis of asthma and presented with an attack of asthma.

Carhan *et al.*² analyzed 1157 samples from nine different provinces in their surveillance studies between November 2007 and May 2008. Of the 1157 samples, 337 samples tested positive. The ratios were influenza A (55.8%), influenza B (26.1%), parainfluenza (8%), adenovirus (7.1%), RSV A (3%), and RSV B (3%). These ratios were obtained 2 years before the pandemic. However, they are similar to the ratios we have found during the pandemic.

In 2009, a Greek study on viruses causing influenza-like illness, using different methods, tested 58 patients from three centers. Their results showed the following incidences and ratios: 39 cases of rhinovirus (67%), 15 cases of adenovirus (26%), 11 cases of influenza virus (19%), 6 cases of coronavirus (10%), three cases of parainfluenza virus (5%), and one case of bocavirus (2%).³ In the study, the highest detection ratio was in samples obtained by nasal washing. In Spain, 183 pharyngeal swabs were tested from patients

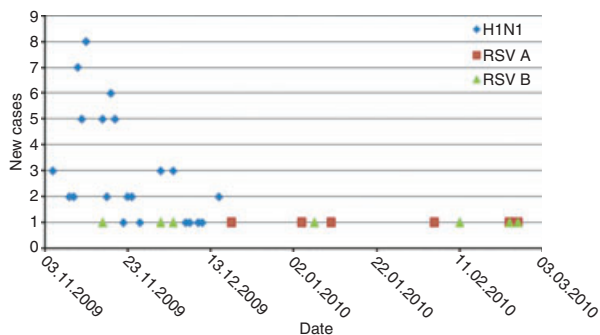


Figure 2. Temporal distribution of influenza (H1N1) A virus and respiratory syncytial virus (RSV) diagnosis.

with an influenza-like disease during the 2007–2008 and 2008–2009 seasons. These swabs were analyzed with multiple rt-PCR, and the ratios were found as follows: influenza A (49%), influenza B/C (29%), RSV A/B (3%), and adenovirus (6%).⁴

Influenza A has often been the most frequently detected agent in influenza-like illness in children and adults prior to 2009. During the 2009–2010 pandemic period, in our study, it was found that other viruses (54.7%) caused influenza-like illness in children rather than influenza A (H1N1) (45.3%). According to Casalegno *et al.*,⁵ in the 2009–2010 pandemic season, RSV was more frequently seen

only after the new influenza (H1N1) A virus had disappeared, as seen in our patients (Figure 2).

The last pandemic season reminds us that during the winter season, in addition to influenza A, other significant respiratory viruses should not be overlooked.

Conflict of interest

None declared.

References

- 1 Chan M. World now at the start of 2009 influenza pandemic. Available at http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html (Accessed 3 April 2010).
- 2 Carhan A, Altaş AB, Albayrak N, Uyar Y. Influenza surveillance results in 2007–2008 winter season in nine provinces of Turkey. *Mikrobiyol Bul* 2009; 43:235–241.
- 3 Spyridaki IS, Christodoulou I, de Beer L *et al.* Comparison of four nasal sampling methods for the detection of viral pathogens by RT-PCR-A GA(2)LEN project. *J Virol Methods* 2009; 156:102–106.
- 4 Abreu AT, Bouza JME, Molins ER *et al.* Vigilancia de la gripe mediante diagnóstico molecular. *Rev Esp Quimioter* 2009; 22:214–220.
- 5 Casalegno JS, Ottmann M, Bouscambert-Duchamp M, Valette M, Morfin F, Lina B. Impact of the 2009 influenza A (H1N1) pandemic wave on the pattern of hibernal respiratory virus epidemics, France, 2009. *Euro Surveill* 2010; 15:pii 19485.