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Influenza A/H1N1pdm09 viral clearance kinetics in hospitalized children and adults

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Background: Influenza viruses cause annually epidemics that produce hospitalization during the acute phase of this disease in both adults and children. In hospitalized patients, viral excretion period (VEP) and viral load (VL) are very variable parameters that can be influenced by the age. Flu in healthy children and young people curse with longer VEP and higher VL than other individuals. However, it is not well known how these differences occur in people with severe flu that need hospitalization during the viral infection. The description of such cases is important for improving the containment and isolation procedures. The aim of this study is to analyze the A/H1N1pdm09 influenza viral kinetics and clearance in hospitalized children and adults.

Material/methods: We designed a prospective observational study obtaining nasal-throat swab samples from 122 hospitalized patients (96 adults and 26 pediatric) from two Public Health Hospitals of Valladolid, Spain. Patients were sampled at the beginning of their hospitalization and then every four days until 12th day after recruitment. Samples were diagnosed for A/H1N1pdm09 virus using *Luminex-200* platform and *RVP-XTAGv2.0* reagents (Luminex, Austin, TX, USA). Relative quantification of influenza viral load was analyzed using LightMix-Kit Influenza A Virus M2 quantification reagents in *LightCycler 2.0* (Roche, Pleasanton, CA, USA), and expressed in this work as log10 copies/ml. Data obtained were analyzed using Student T test in SPSSv20.

Results: The highest VL for both pediatric and adult patients was observed at the first sampling date (day of hospitalization) (Table 1). VL decreased steadily and remains negative in all hospitalized

children studied at third sampling. However VL was still positive at 4th sampling in hospitalized adults (log10 copies/ml: 2.0; CI95%:0.1-2.5). VL was higher in adult patients than children in all samplings, however, no significant differences were observed between these values during all study ($p>0.05$).

	Pediatrics-log10 copies/ml (CI95%)	Adults-log10 copies/ml (CI95%)
Sampling 1 (hospitalization)	4.7 (3.9-5.0)	5.5 (4.2-6.0)
Sampling 2 (4^{th} day)	3.1 (2.4-3.4)	4.1 (2.7-4.6)
Sampling 3 (8^{th} day)	0.1 (0.1-0.1)	2.3 (0.1-2.7)
Sampling 4 (12^{th} day)	0.1 (0.1-0.1)	2.0 (0.1-2.5)

Table 1. Viral load (log10 copies/ml) and CI95% for children and adult patients during the four respiratory samplings of the study.

Conclusions: Our results showed that VL in hospitalized patients was similar for both adults and children. Also we found that duration of viral shedding, although longer in few adults, was not significantly different. Those results in hospitalized and severe flu cases contrast with previous findings in children. Further research is warranted to asses this issue.