

Clinical Characteristics and Cost Burden of Children Hospitalized with Pandemic Influenza A (H1N1-2009) in a Tertiary Care Center in İstanbul

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Dear Editor,

After the detection of the first case in April 2009, pandemic H1N1 influenza caused infection in more than 214 countries, resulting in at least 18,449 deaths. A multicenter study in Turkey revealed that 821 children were hospitalized with pandemic H1N1 influenza (1). The economic burden of pandemic H1N1 influenza has been estimated for many countries (2-4). We aimed to evaluate the clinical features and direct medical costs of children hospitalized with pandemic H1N1 influenza in comparison with H1N1 negative patients.

Charts of children admitted to a single center with suspicion of pandemic H1N1 influenza were reviewed. Patients with clinical findings compatible with the criteria defined by the World Health Organization or a history of contact with a person with influenza-like illness (ILI) who had undergone microbiologic testing were included. The "in-house" real-time polymerase chain reaction protocol provided by the Centers for Disease Control and Prevention was used for the detection of pandemic H1N1 influenza. Underlying risk factors, clinical features, and total costs were determined. Total costs included bed stay, diagnostics, pharmacy, and charges for medical services. The present retrospective study was approved by the Institutional Ethics Committee and written informed consent was taken from all parents or legal guardians.

Among 90 patients hospitalized during November 2009 and January 2010, 32 were laboratory confirmed cases of pandemic H1N1 influenza. 43.8% had an underlying risk factor, with neuromuscular disorders (18.8%) and chronic respiratory diseases (15.5%) being the most common. 31.2% had thrombocytopenia (platelets < 150,000/mm³), 25% had leukopenia (leukocytes < 4x10³/mL), 18% had leukocytosis (leukocytes > 11x10³/mL), 37% had elevated aspartate aminotransferase (> 35 IU/L) and 18% had elevated alanine amino-

TABLE 1. Demographic, clinical and cost data of H1N1 positive and H1N1 negative patients

Characteristic	H1N1 positive (n=32)	H1N1 negative (n=58)	p
Age, months*	54.28±46.71	49.60±48.26	0.46
% Antibiotic therapy	96.9	96.6	0.93
% Antiviral therapy	96.9	91.4	0.31
Duration of hospitalization (days)*	5.97±3.50	5.95±4.71	0.53
Direct medical cost (USD)**	254	195	0.20

*Mean±SD, **Median

transferase levels (>46 IU/L). Fever (100% versus 84%) and lethargy (28.1% versus 8.6%) were more prevalent in H1N1 positive patients in comparison to H1N1 negative cases. Only one patient with pandemic H1N1 influenza and neuromuscular disease died on the 11th day of admission. The median cost of hospitalization for pandemic H1N1 influenza was \$254 USD per case (Table 1).

Our study provides the first evidence that pandemic H1N1 influenza resulted in a substantial cost burden related to hospitalized children in Turkey. In comparison with H1N1 negative patients, the direct cost was slightly higher in the H1N1 positive group, but the difference was not significant since the majority of patients had received antiviral and antibiotic treatment due to heightened concern of physicians. The clinical features of the two groups were similar, except for a higher prevalence of fever and lethargy in the H1N1 positive patients. A similar study conducted in an adult population of Turkey revealed that altered mental status, fever ≥38°C, and tachypnea were significantly higher in patients with confirmed influenza (5). The mean hospital charges incurred for the 61 hospitalized children during the spring 2009 pandemic influenza epidemic in Wisconsin was \$14,687 USD (2). Total

This study was presented as poster at the 29th Annual Meeting of European Society of Pediatric Infectious Diseases (ESPID), 7-11 June 2011, The Hague, Netherlands.



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Received: 15.11.2013 Accepted: 01.07.2014 • DOI: 10.5152/balkanmedj.2014.13098

Available at www.balkanmedicaljournal.org

direct health care costs were determined to be \$510 USD per patient hospitalized with pandemic H1N1 influenza in Malaysia (3). Zarogoulidis et al. (4) reported that health care costs were higher for pandemic H1N1 influenza compared with non-H1N1 respiratory infections, mainly due to the protection measures used and the increased duration of hospitalization in the intensive care unit.

Ethics Committee Approval: The present retrospective study was approved by the Institutional Ethics Committee.

Informed Consent: Written informed consent was taken from all parents or legal guardians.

Peer-review: Externally peer-reviewed.

Author contributions: Concept - Ö.T., N.H.; Design - Ö.T.İ., G.E., E.A.; Supervision - Ö.T., N.H., X.X.; Resource - Ö.T., İ.G., E.A.; Materials - Ö.T., N.H.; Data Collection&/or Processing - Ö.T., N.H., İ.G., E.A.; Analysis&/or Interpretation - Ö.T., N.H.; Literature Search - Ö.T., N.H.; Writing - Ö.T., İ.G.; Critical Reviews - Ö.T., N.H.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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