H1N1 influenza vaccination and infection in pediatric heart transplants

To the Editor:

Following the outbreak of H1N1 influenza in Mexico, the World Health Organization raised its pandemic alert to the highest level in June 2009. In Spain, H1N1 vaccinations began in November 2009 in children with specific risk factors such as immunosuppression. We report our experience in H1N1 influenza virus infection in children with heart transplantation.

Sixty-seven children are followed in our pediatric heart transplantation outpatient clinics. From July 2009 to March 2010, 11 of them (16.4%) had a respiratory infection attributed to H1N1 influenza. Forty-two (62.7%) received H1N1-specific vaccination. Four (36.4%) of the 11 infected patients and 38 (67.9%) of the 56 healthy patients had been vaccinated. The relative risk for H1N1 infection among the non-vaccinated in our population was 2.94 (95% confidence interval: 0.96 to 9.05). In 5 cases (7.5%), the infection was confirmed by real time reverse transcriptase polymerase chain reaction (rRT-PCR) or culture. All patients received oral oseltamivir for 5 days with no side effects. There were 3 girls and 2 boys, mean age 8.2 years (range 21 months to 14 years). Time after transplantation averaged 6.2 years (range 5.9 months to 14 years). Immunosuppressant therapy included tacrolimus and mycophenolate mofetil mainly in 4 and triple therapy with corticosteroids in 1. The clinical presentation of the infection in these patients differs from the standard definitions for influenza-like illness. Three patients had mild to high fever with cough, whereas 2 remained afebrile, showing respiratory symptoms. Two of the patients with fever were hospitalized with intravenous antibiotics: 1 for a lung condensation and the other while waiting for blood cultures, which were finally negative. They remained hospitalized for 2 and 5 days, respectively, and neither needed oxygen therapy. The other patient with fever was not hospitalized and received no antibiotics. The 2 patients with respiratory difficulty were toddlers. One of them had bronchiolitis symptoms, and the other had a tracheostomy and domiciliary-assisted ventilation. They were hospitalized for 6 and 21 days, respectively, and both received oxygen therapy and antibiotics. *Serratia marcescens* was confirmed in the respiratory samples of the tracheotomy patient. Another 6 patients received oseltamivir for influenza-like illness, but we did not perform rRT-PCR or culture. None were hospitalized and they all had a good outcome.

Very few H1N1 infections in heart transplant patients have been reported, but with widely varied outcomes. None of our patients were admitted to the intensive care unit and there were no cardiac or other related complications such as rejection or myocarditis. Several risk factors can identify children undergoing organ transplantation who are more likely to acquire severe influenza disease. In our case series, the patient with a longer stay in hospital was the youngest, the most recently transplanted, and with a higher level of immunosuppression (triple therapy) and more advanced lung disease.

Seasonal administration of influenza vaccine is recommended for all transplant recipients every year, so was the specific vaccination for H1N1 influenza this year. The CDC estimated that the vaccination coverage in high-risk groups in the United States to be 33.2%. Our immunization coverage was high (62.7%), probably due to efforts to fulfill the recommendations and the experience in respiratory infections in children with congenital heart disease. Vaccination may show a protective role in pediatric transplant patients in the season 2009-2010.

In conclusion, H1N1 influenza infection can have a non-severe outcome in a broadly vaccinated and treated pediatric heart transplant population. Efforts must be organized to gather information from documented cases of novel H1N1 influenza to shed light on the clinical spectrum, outcome, risk factors or immunization response in this group of children.

Disclosure statement

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