Serum antibody titres against influenza virus in pediatric patients after treating with peramivir

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Background

Influenza virus infection is known to be basically self-limiting; however, severe condition, such as respiratory failure and encephalopathy, sometimes occur especially in high-risk group of patients, including children, and thorough treatments are required. Peramivir (Rapiacta®, Shionogi & Co., Ltd. / BioCryst), one of neuraminidase inhibitors, administering intravenously, was approved in Japan; A clinical trial for children was conducted during the 2009-2010 influenza season. The data from the trials showed that peramivir is effective and safe enough to use in both adults and children with influenza virus infection. Because it is highly effective and the time to recover from the infection is shortened after the administration, it was uncertain whether a patient obtains serum antibody against influenza virus after treating with peramivir.

Materials and methods

A multicenter and open-label clinical trial without a control group was conducted in children with influenza virus infection during the initial A/H1N1pdm2009 influenza epidemic in Japan to evaluate the efficacy and safety of peramivir. Peramivir was given intravenously at a dosage of 10 mg/kg (600 mg maximum) once daily. Nine patients (4 m/o - 15.5 y/o, median: 1.2 y/o, male/female: 3/6) were enrolled in our facility and were treated with peramivir within 48 hours (5.6 - 28.6 hours, median: 16.1 hours) after developing fever. Blood samples were provided before and after the administration and serum was separated from each sample and analyzed for the titre of antibody against the A/H1N1pdm2009 influenza virus strain in the hemagglutination inhibition (HI) test.

Results

Ten samples from seven patients were obtained before and next day of the administration (within 60 hours after the onset), and all of them showed negative HI titres less than 1: 10. Four samples from four patients were provided 5 - 7 days after the onset; two showed HI titres 1: 10 and the other two showed less than 1: 10. Nine samples from each patient 1 - 2 months after onset were investigated; all showed positive HI titres (1: 40 - 1: 640).

Conclusions

Although peramivir produces rapid recovery from influenza virus infection, it does not seem to interfere with obtaining antibodies in blood.