INTRODUCTION OF CROSS-NEUTRALIZING ANTIBODY AGAINST H5N1 VIRUS AFTER VACCINATION WITH SEASONAL INFLUENZA VACCINE IN COPD PATIENTS

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Background: Infections caused by influenza viruses led to morbidity and mortality, particularly among patients with chronic pulmonary conditions. The first documented human cases of avian H5N1 influenza in Hong Kong in 1997, resulted in severe disease or death. Among human influenza viruses, heterosubtypic immunity has been demonstrated for various combinations of heterosubtypic influenza virus strains.

Objective: The purpose of this serological study was to demonstrate the ability of seasonal influenza vaccine to induce neutralizing antibody to H5N1 virus in patients with COPD.

Methods:

The 118 subjects were divided into 58 vaccinees (mean age 68.5 years) and 60 non-vaccinees (mean age 68.4 years).

Antibodies to H1N1 and H3N2 viruses were detected by hemagglutination inhibition test (HI).

Antibody to H5N1 virus was detected by microneutralization (NT) test.

Results:

1. Prevalence (10.3% vs. 6.7%) and geometric mean titers (GMTs) (5.37 vs. 5.24) of H5N1 NT antibodies prior to vaccination in vaccinated and non-vaccinated groups, were not statistically significant.

2. Among 102 patients with influenza-like illness consisting of 22 influenza patients and 83 non-influenza patients, no patient with increase of ≥ 4 fold rising in NT titers was observed.

3. After one-month of seasonal influenza vaccination, inducible cross-neutralizing antibodies against H5N1 virus were measured. Even, increasing GMTs of paired blood samples in the vaccinated group (6.05 vs. 5.37, p = 0.10) were not statistically significant whereas those in non-vaccinated group were not detected. Three (5.2%) subjects who had no symptom of influenza-like illness in the vaccinated group showed H5N1 seroconversion with H5N1 NT antibody titers of ≥ 40, while none in the non-vaccinated group did.

Conclusion: Vaccination with seasonal influenza vaccine can induce cross-neutralizing antibody at a protective level against H5N1 virus in the elderly patients with COPD.