RETROVIROLOGY

POSTER PRESENTATION Open Access

Is there pre-existing cross-reactivity to influenza A (H1N1)2009 in a tropical population?

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From 16th International Symposium on HIV and Emerging Infectious Diseases
Marseille, France. 24-26 March 2010

Background

With the advent of the 2009 influenza pandemic, we sought to determine if there was pre-existing cross-reactive response and potential protection against the novel influenza A (H1N1) pandemic virus in our population in tropical Singapore.

Methods

246 archived sera collected between January 2008 and March 2009 from persons aged 0 – 93 years were tested, in serial dilution from 10 to 1280, for haemagglutination inhibiting (HI) antibody against pandemic influenza A/Auckland/1/2009(H1N1)v and seasonal influenza A/Brisbane/59/2009(H1N1).

Results

12.6% had detectable antibody titres against A/Auckland/1/2009(h1N1)v. Of these, only 2.9% had titres ≥ 40; such titres were most frequently seen in persons aged at least 70 years (9.4%; 3 of 32), followed by those aged 20 – 29 years (6.5%; 2 of 31) and 30 – 39 years (5.9%; 2 of 34). The peak titre was 160, in 2 individuals aged 91 and 30 years. None from the other age groups showed any sero-reactivity.

Comparatively, antibody reactive to A/Brisbane/59/2002(H1N1) was detectable in 52.7% of all individuals and 20.8% of these had titres ≥ 40. Those aged 10 – 19 years, followed by 20 – 29 years, had the highest percentage of titres ≥ 40 of 51.5% and 45.2%, respectively. The peak titre detected was ≥ 1280.

Discussion

We found minimal cross-reactive antibody response to the 2009 H1N1 virus in our study group. The very elderly (70 years old and above) had the highest frequency of titres of ≥ 40, at a mere 9.4%. They probably had been infected in the distant past with strains more antigenically related to the present virus. Four relatively young and mobile adults between 20 to 39 years old had titres ≥ 40 against 2009 H1N1, possibly through travel-associated exposure in a globally connected world. With only 2.9% overall having titres ≥ 40, it would appear that virtually the entire population would need the pandemic influenza vaccine and/or adherence to infection control practices for protection.

Published: 11 May 2010

doi:10.1186/1742-4690-7-S1-P181
Cite this article as: Chan *et al.*: Is there pre-existing cross-reactivity to influenza A (H1N1)2009 in a tropical population?. *Retrovirology* 2010 7(Suppl 1):P181.

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