Abstract ID : **28**

Influenza winter 2017/2018 winter season in Umbria (Italy): influenza virus circulation and vaccine immunogenicity

Content

The 2017/2018 winter season was characterized by a high and persistent influenza virus activity. A co-circulation of A/H3N2, A/H1N1 and B Influenza viruses was observed and their genetic and antigenic characterization induced WHO to recommend the inclusion of new strains of influenza A/H1N1 and B viruses in the 2018/2019 influenza vaccine.

We studied the 2017/2018 influenza virus circulation in Umbria, a little Italian region, examining 131 throat swabs. Eighty-five (65%) were positive: 38 A/H1N1, 4 A/H3N2 and 42 B influenza viruses. Lineage determination (genetic and antigenic tests) of some of the circulating B influenza virus evidenced that they were mainly B/Yamagata not included in 2017/2018 trivalent vaccine (TIV). Vaccine immunogenicity was examined in 38 elderly people (mean age 85 years, range 65-98) living in a nursing home after 2017/2018 TIV administration. Although high pre-vaccination haemagglutination inhibiting (HI) titers were found before vaccination against all the 3 vaccine antigens, the vaccine was able to induce in most instances significant antibody titer increases evaluated as protective titers (HI ≥40) and geometric mean titers (GMT) satisfying at least 2 of the 3 the European Medicine Agency criteria. Moreover we examined the possibility of TIV induced B cross-lineage protection, comparing HI titers against the vaccine B antigen (B/Victoria/lineage) and against different B/Yamagata/lineage strains (the new B antigen for 2018/2019 vaccine (B/Phuket/3073/2013) and 4 Yamagata-like strains isolated in Umbria). A moderate ability of influenza vaccine with a B/Victoria component to enhance antibodies against B/Yamagata-like viruses was observed, however the responses were lower and less satisfactory. Similar results were found examining neutralization antibody titers.

Our results evidenced the ability of 2017/2018 TIV of inducing satisfactory response in elderly institutionalized people. Moreover we found a moderate ability of 207/2018 influenza vaccine containing B/Victoria component to enhance antibodies against circulating B/Yamagata-lineage viruses. These data support the 2017/2018 interim vaccine efficacy against influenza B/Yamagata observed in a Spanish and in a European multi-country study (Euro Surveill.2018;23(9):pii=18-00086), underlying the opportunity of increasing the very limited use of influenza quadrivalent vaccines, containing both B/Victoria and B/Yamagata-lineage strains.

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Contribution Type : Paper presentation