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Longitudinal characterisation of cell-mediated immune responses following influenza A(H5N8) vaccination

Inhalt

In 2023, Finland experienced a major outbreak of highly pathogenic avian influenza caused by clade 2.3.4.4b influenza A(H5N1) virus, with transmission from wild birds to fur farms. In June 2024, Finland became the first country to vaccinate occupational risk groups using the MF59-adjuvanted influenza A(H5N8) vaccine (A/Astrakhan/3212/2020, Seqirus). We aimed to characterise the quality and durability of cellular immune responses induced by this novel vaccine. Peripheral blood mononuclear cells were collected before vaccination and at 3 weeks, 6 months and 12 months after the second vaccine dose. Antigen-specific T-cell responses were analysed using an activation-induced marker assay following stimulation with overlapping H1, H5 and N8 peptide pools. Vaccine-induced B-cell responses were evaluated using ELISpot assay and flow cytometric detection of H5-specific memory B cells. Robust H5/N8-specific $CD4^+$ T-cell responses and relatively weak $CD8^+$ T-cell responses were observed. Cellular responses remained detectable 12 months after vaccination. Analyses also indicated induction of H5-specific memory B cells, with declining kinetics during follow-up. The influenza A(H5N8) vaccine induces durable cellular immune responses in individuals at occupational risk of avian influenza exposure. This research provides important information on the durability of influenza A(H5N8) vaccine -induced immunity, which supports future pandemic preparedness and avian influenza vaccine development.

Keywords

Avian influenza, Cellular immunity, Influenza A(H5N8) vaccine

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Yes, I am a junior scientist.

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