Immunogenicity and safety of two doses of AS03A-adjuvanted influenza A H1N1v vaccine in cancer patients on chemotherapy - VACCINE study

P. Loulergue¹, B. Rousseau², O. Mir³, A. Krivine, A. de Gramont², F. Goldwasser³, O. Launay¹, C. Tourignand²

Background

Influenza vaccination is recommended to cancer patients undergoing chemotherapy, but vaccine coverage remains low. During the 2009 influenza pandemic, French recommendations were to vaccinate immunocompromised patients with two doses of adjuvanted vaccine. This study aimed to evaluate vaccine immunogenicity in cancer patients receiving chemotherapy.

Patients and Methods

VACCINE is a prospective open-label study conducted in two teaching hospitals in Paris, France. The study was conducted from 2009 to 2010. Patients were grouped according to treatment frequency: - patients receiving chemotherapy every 3 weeks (group 3W), - patients receiving chemotherapy every 2 weeks (group 2W), - and patients only treated with targeted therapies, whatever the periodicity (group T). Groups 3W and 2W received the first vaccine dose on day 7 of the chemotherapy, and the second dose 3 weeks later. Alternatively, patients receiving chemotherapy and targeted therapies were included in group T. The study vaccine was Pandemrix® (GlaxoSmithKline Biologicals, Rixensart, Belgium), a monovalent A/H1N1v inactivated influenza vaccine, containing the A/California/7/2009 (H1N1v) strain with titres of 1:40 or more, which may represent exposure to the A/H1N1v virus or in vitro cross-reactivity.

Seroconversion factors were 4.71 (seroconversion rate: 72.7%) at D42, respectively, indicating the percentage of patients who had an immune response to the vaccine.

The main objective of the study was to assess the immunogenicity of one and two doses of an AS03A-adjuvanted H1N1v influenza vaccine.

Results

Safety: The vaccine was well-tolerated. Safety data on D42 showed that mild and moderate adverse events occurred with the same intensity and frequency as on D21, and no severe reactions related to the study vaccine were observed.

Study population

This prospective study was conducted in two teaching hospitals in Paris, France. Patients were grouped according treatment frequency: - patients receiving chemotherapy every 5 weeks (group 5W), - patients receiving chemotherapy every 2 weeks (group 2W), - patients receiving chemotherapy weekly or daily (group D), and patients only treated with targeted therapies, whatever the periodicity (group T). Groups 3W and 2W received the first vaccine dose on day 7 of the chemotherapy, and the second dose 3 weeks later.

Immunogenicity:

• At baseline, only three (48%) patients had HI antibodies against the A/California/7/2009 (H1N1v) strain with titres of 1:40 or more, which may represent exposure to the A/H1N1v virus or in vitro cross-reactivity.

• Seroconversion rates were 44.4% and 72.7% at D21 and D42, respectively, indicating the percentage of patients who had an immune response to the vaccine.

• Seroconversion factors were 4.71 (seroconversion rate: 72.7%) at D42, representing the intensity of immune response to the vaccine in terms of a fold increase in antibody titre.

Discussion

This study, which evaluated the immunogenicity of vaccination against 2009 H1N1v in immunocompromised patients treated with anticancer drugs, showed that:

- immunogenicity of one dose of vaccine was globally low (seroconversion rate: 48.6%), especially in patients treated with cytotoxic drugs given every 3 weeks,
- a second dose of vaccine induced a higher level of immunogenicity (seroconversion rate: 72.7%), because no data were available on immunogenicity in cancer patients treated with cytotoxic drugs and/or targeted therapies, we conducted a prospective study to evaluate the immunogenicity and safety of this new inactivated influenza vaccine in cancer patients receiving different chemotherapy schedules and/or targeted therapies. We focused on the type (cytotoxic vs. targeted therapy) and type of chemotherapy on immunogenicity and to assess the vaccine’s safety.