Efficacy of flu vaccine drastically reduced for RA patients treated with rituximab

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Rheumatoid arthritis (RA) patients are partially protected by the influenza vaccine 6-10 months after treatment with rituximab. Researchers determined that while the flu vaccine is safe, it is ineffective for RA patients in the first 6 months following rituximab treatment. Previous influenza vaccination in rituximab-treated patients does increase pre- and post-vaccination titers, providing some defense to influenza strains. RA activity was not influenced by administration of the flu vaccine. Complete findings of this study are available in the January 2010 issue of *Arthritis & Rheumatism*.

RA, a common autoimmune disease, affects 4.6 million individuals worldwide and more than half of those diagnosed are woman, according to a 2000 report on global incidence by the World Health Organization (WHO). Patients with RA are immunocompromised, meaning their immune systems do not function normally, putting them at increased risk of infection. Due to a compromised immune system, doctors advise RA patients to get vaccinated each year against influenza including the new H1N1 virus.

Sander van Assen, M.D. and colleagues from the University Medical Center Groningen in The Netherlands conducted the largest study to date of the effectiveness of the flu vaccine in RA patients using rituximab. Three groups of patients were enrolled in the study: 23 RA patients using rituximab, 20 RA patients taking methotrexate (MTX), and 29 healthy individuals. Those patients taking rituximab were split into two groups with 11 who received the influenza vaccine 4-8 weeks after treatment

with rituximab (early rituximab subgroup), and 12 individuals who were given the flu shot 6-10 months post-treatment with the drug (late rituximab subgroup). Influenza vaccines were administered intramuscularly between October 2007 and January 2008.

Researchers tested geometric mean titers (GMTs) for each group and found they significantly increased for all influenza strains in the MTX-treated group and in healthy controls, but for none of the influenza strains in the rituximab-treated group. In the late rituximab subgroup, a rise in GMT was noted for the A/H3N2 and seasonal A/H1N1 flu strains indicating some recovery of an immune response 6-10 months after treatment by rituximab. Also less rituximab-treated patients reached levels of antibodies needed for protection against influenza for the A/H3N2 and seasonal A/H1N1 when compared with MTX-treated patients, and for the seasonal A/H1N1 when compared with healthy individuals.

Results further showed that healthy individuals vaccinated the year before showed higher baseline GMT for the A/H3N2 strain than unvaccinated health controls. In the MTX group, higher baseline antibodies were noted for the seasonal A/H1N1 and B strains in previously vaccinated patients compared with unvaccinated subjects. For the Rituximab group, patients previously vaccinated not only had a higher baseline GMT, but also a higher post-vaccination GMT for the seasonal A/H1N1 than patients who were not vaccinated the prior year.

The safety of the flu vaccine was also tested by researchers and found to be safe. There were no differences noted between the 3 groups in the occurrence of side effects from the vaccination. Researchers determined that RA activity was not influenced by the flu vaccine and used the disease activity (DAS28) score prior to vaccination and at 7 and 28 post-vaccination to assess RA activity in patients in the MTX and rituximab groups.

"Individuals who have compromised immune systems, such as with RA, are at risk for complications from contracting the flu virus," said Dr. van Assen. "We recommend yearly influenza vaccination for all RA patients and preemptive vaccination for flu should be considered by those patients who start rituximab treatment."

More information: "Humoral Responses After Influenza Vaccination Are Severely Reduced in Patients With Rheumatoid Arthritis Treated With Rituximab." Sander van Assen, Albert Holvast, Cornelis A. Benne, Marcel D. Posthumus, Miek A. van Leeuwen, Alexandre E. Voskuyl, Marlies Blom, Anke P. Risselada, Aalzen de Haan, Johanna Westra, Cees G. M. Kallenberg, and Marc Bijl. Arthritis & Rheumatism; Published Online: December 28, 2009 (DOI: 10.1002/art.25033); Print Issue Date: January 2010

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