Efficient boosting of the antiviral T cell response in B cell-depleted patients with autoimmune rheumatic diseases following influenza vaccination

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OBJECTIVES
Booster vaccination against 2009 H1N1 influenza virus was recommended for rheumatologic patients under immunosuppressive therapy during the 2009/2010 H1N1 pandemic. In this study we assessed whether B cell depletion with rituximab influences the antiviral immune response in 2009 H1N1 influenza virus-vaccinated patients.

METHODS
Influenza virus-specific immune responses were analysed after the first and a booster vaccination with pandemrixTM in sixteen consecutive rituximab-treated patients with different rheumatic autoimmune disorders. Antibody titers were determined by a haemagglutination-inhibition assay and virus-specific T cell responses were evaluated by a flow cytometry-based intracellular cytokine-secretion assay. Patients showing clinical symptoms of influenza infection were excluded from this study.

RESULTS
Two out of seven patients with low (<10%) and four out of nine with normal (>10%) B cells developed significant antibody responses after the first vaccination. Booster vaccination led to an antibody response in one additional patient. After the first vaccination, virus-specific CD4+ and CD8+ T cell responses were significantly lower in patients with low B cells than in those with normal B cells. Of importance, the booster vaccination stimulated the antiviral T cell response only in patients with low B cells.

CONCLUSIONS
In the absence of a significant effect of booster vaccinations against 2009 H1N1 influenza virus on the humoral immune response in B cell-depleted patients with autoimmune rheumatic diseases, enhanced antiviral T cell responses in patients with low B cells indicate that T cells, maybe, compensate for the impaired humoral immunity in these patients.