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Predictors for influenza vaccine acceptance among patients with inflammatory rheumatic diseases

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ABSTRACT

Background: Patients with inflammatory rheumatic diseases are at higher risk for influenza and current guidelines recommend vaccination for this group of patients. The aim of this study was to evaluate the vaccination coverage and predictors for influenza vaccination among patients with inflammatory rheumatic diseases.

Methods: This survey was conducted at the outpatient rheumatology clinic at the Medical University of Vienna between July and October 2017. All patients diagnosed with an inflammatory rheumatic disease and receiving immunosuppressive therapy were asked to complete a questionnaire about their influenza vaccination status for 2016/17.

Results: 490 patients with rheumatic diseases completed a questionnaire (33% male, mean age 55.3 years). The influenza vaccination rate for the previous season was 25.3% (n = 124/490). Predictors for a positive influenza vaccination status were higher age (Adjusted Odds Ratio 5.0, 95% Confidence Interval 2.4–10.4) and treatment with biological disease-modifying antirheumatic drugs (AOR 2.0, 95% CI 1.3–3.1). Patients who received a recommendation for influenza vaccination by their general practitioner were significantly more likely to be vaccinated than those who did not (57% vs. 15%, AOR 6.6, 95% CI 4.1–10.8); even more so if they received a recommendation by their rheumatologist (62% vs. 19%, AOR 9.0, 95% CI 4.9–16.5). The main reasons for patients to decline influenza vaccination were fear of side effects (36%), concerns that vaccination might not be effective due to their immunosuppressed condition (38%) or that it might worsen the rheumatic disease (20%).

Conclusions: A moderate influenza vaccination rate of 25.3% was detected among patients with inflammatory rheumatic diseases. Recommendation of the influenza vaccine by a physician exerts the most effective impact on a positive vaccination status.

1. Introduction

Influenza is a respiratory viral disease, which can be self-limiting but also lead to severe complications like pneumonia or organ failure depending on factors such as patient's age, comorbidities and immunosuppressive medication [1,2]. Patients with inflammatory rheumatic diseases are at higher risk for influenza and its complications than the average population. A large cohort study showed that the incidence of influenza complications was 2.75-fold higher in patients with rheumatoid arthritis [3]. The current EULAR guideline about vaccination for patients with rheumatic diseases strongly recommends vaccination against seasonal influenza [4]. Several issues have to be considered when vaccinating patients with autoimmune diseases. On the one hand, the immune response may be blunted due to immunosuppressive medication and on the other hand, patients as well as physicians might be concerned about increased disease activity triggered by vaccination [5]. The efficacy of influenza vaccination in patients

Abbreviations: CI, Confidence Interval; DMARD, disease-modifying antirheumatic drug; EULAR, The European League against Rheumatism; GP, General Practitioner; HIV, Human Immunodeficiency Virus; IVR, influenza vaccination rate; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus; SOP, Standard operating procedure; OR/AOR, odds ratio/adjusted odds ratio; PMR, Polymyalgia rheumatica.

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with inflammatory rheumatic diseases has been shown to be similar to that of healthy individuals [6]. In most studies, the immune response was not reduced by conventional disease-modifying antirheumatic drugs (DMARDs) or TNF alpha blockers [7,8]. In contrast, treatment with Rituximab substantially reduces the effect of vaccination in the months after administering B-cell depleting therapy [9]. In general, seasonal influenza vaccination is considered safe for patients with inflammatory rheumatic diseases as most studies have not reported any increase in disease flares after vaccination [6]. However, these concerns have to be taken seriously as they can influence vaccination behaviour of patients with rheumatic diseases. There are studies reporting alarmingly low influenza vaccination rates in patients with rheumatic diseases in several European countries [10,11]. Therefore, it seems important to gain further insight into factors influencing vaccination behaviour in this specific group of patients. The aim of this cross-sectional study was to evaluate the influenza vaccination rate (IVR) among patients with inflammatory rheumatic diseases as well as the predictors for a positive vaccination status.

2. Patients and methods

2.1. Study population

This survey was conducted at the outpatient clinic of the Division for Rheumatology at the Medical University of Vienna, Austria. Patients who visited the outpatient clinic between July and October 2017 were asked to participate in this survey by completing a questionnaire. Inclusion criteria were an established diagnosis of an inflammatory rheumatic disease and an immunosuppressive therapy at the time of influenza vaccination. Vaccination against influenza is not provided by the rheumatology outpatient clinic, but usually by the general practitioner.

2.2. Questionnaire

The questionnaire consisted of ten questions which addressed demographic data (age, sex), the respective rheumatic disease (diagnosis, therapy, duration), influenza vaccination status for the previous influenza season (2016/17), sources of information about influenza vaccination including information and recommendations received by physicians, and reasons for declining the influenza vaccine.

2.3. Ethical considerations

The Ethics Committee of the Medical University of Vienna approved the study (No. 1364/2013). Participation was voluntary and completion of the questionnaire implied consent for study participation. All information was evaluated anonymously and kept confidential.

2.4. Statistical analysis

Continuous data are presented as mean ± standard deviation, categorical data as absolute count and relative frequency. Proportions were calculated together with exact binomial 95% confidence intervals (95% CI). For further analysis, age and duration of illness were categorised into quintiles. To identify predictors for vaccination we calculated odds ratios (OR) using logistic regression models with vaccination as the outcome and the predictors as covariates. To assess the influence of age and sex on the estimates, these were included as other covariables in these models. The likelihood ratio test was used to test for deviation from linearity and to test for interactions with age and sex. Generally, a two-sided p-value of less than 0.05 was considered statistically significant. MS Excel and SPSS version 23 (IBM, USA) were used for data management and statistical analysis.

3. Results

3.1. Characteristics of study population and influenza vaccination rate

A total of 490 patients were included in this study with an influenza vaccination rate (IVR) of 25.3% (n = 124/490, 95% CI 21.4–29.2) for the previous influenza season (2016/17). Overall, 163 (33.5%) male and 324 (66.5%) female individuals participated with an IVR of 24.5% and 25.6%, respectively, showing no significant difference between genders (OR 1.1, 95% CI 0.7–1.6). The mean age of the study population was 55.3 years (± 14.3 years) and a significant association between higher age and increased IVR was detected (Fig. 1). In the oldest age quintile (70 years and older) 41.1% of patients were vaccinated compared to 12.2% in the youngest age group (18 to 43 years old; OR 5.0, 95% CI 2.4–10.4).

3.2. Influence of rheumatic disease and therapy on influenza vaccination rate

Among the most commonly diagnosed inflammatory rheumatic diseases were rheumatoid arthritis (n = 224); spondyloarthritis (n = 135) including ankylosing spondylitis (n = 27) and psoriatic arthritis (n = 71); connective tissue disease (n = 130) including systemic lupus erythematosus (SLE, n = 75), Sjögren's syndrome (n = 21), systemic sclerosis (n = 20), mixed connective tissue disease (n = 18) and autoimmune myositis (n = 12); polymyalgia rheumatica (PMR, n = 16) and vasculitis (n = 14). Considering an association between underlying disease and IVR, patients with SLE showed a low IVR of 14.7% (OR 0.5, 95% CI 0.2–0.9) while patients with PMR had a high IVR of 50% (OR 3.1, 95% CI 1.1–8.4). However, once adjusted for age and sex, these differences were not significant, neither for SLE (AOR 0.6, 95% CI 0.3–1.3) nor for PMR (AOR 1.8, 95% CI 0.6–5.1).

All patients had received immunosuppressive therapy with glucocorticoids (n = 203/490, 41.4%) and/or conventional DMARDs (n = 364/490, 70.6%) and/or biological DMARDs (n = 161/490, 32.9%) during the past influenza season. Patients who received

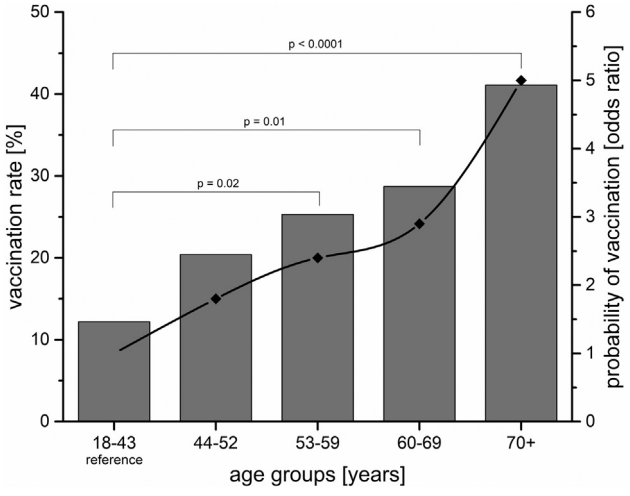

Fig. 1. Vaccination status according to age (n = 490): vaccination rate in percentages per group shown by histogram and odds ratios for probability of vaccination depicted as spline graph. The youngest age group serves as reference group for calculating odds ratios and p-values in comparison to other age groups. For detailed data refer to Table S1 in the supplementary material.

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