Influenza and Pneumococcal Vaccination and Varicella Status in Inflammatory Arthritis Patients

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Abstract

Patients with inflammatory arthritis are at increased risk of vaccine preventable infections. This risk is increased by immunomodulatory therapies. Vaccination for influenza and pneumococcal disease reduces the risk. Severe cases of varicella infection have occurred in patients on biologic therapies. We sought to identify vaccination rates for commonly acquired infections and to ascertain varicella immune status in patients with inflammatory arthritis. 100 patients with inflammatory arthritis were administered a standardised questionnaire. Data collected included age, diagnosis, vaccination history, history of varicella, treatment and the presence of other indications for vaccination. 58 patients (58%) had not received the influenza vaccine in the past year. Only 19 patients (19%) had ever received pneumococcal vaccine. Anti TNF use did not predict vaccination (p=0.46). An increasing number of co morbid conditions predicted both pneumococcal (p<0.003) and influenza vaccine (p<0.03) administration. Nineteen patients (19%) gave no history of varicella infection, none having had varicella titres checked pre treatment. Immunisation rates in patients with inflammatory arthritis on immunosuppressive therapies are low. Immunisation schedules should be available for each patient during rheumatology and general practice consultations.

Methods

Inflammatory arthritis sufferers have higher rates of infection compared to the general population. Vote disorder, co-morbid conditions and treatment with steroids and anti-TNF agents contribute to this risk. Disease modifying therapies (DMARDs), in particular methotrexate, have not been demonstrated to increase the risk of infection. The most common infections in patients with rheumatic diseases involve the respiratory tract, with bacterial infection accounting for the majority. Streptococcus pneumoniae is the pathogen in approximately 50% of cases of community acquired pneumonia. Influenza affects up to 20% of the population during epidemics. Against influenza and pneumococcal disease is safe in patients with rheumatic diseases on immunosuppressants and international guidelines recommend their routine use. In Ireland, national guidelines for vaccination identify nine adult at risk groups, which include patients with immunosuppressive conditions such as B- and T-cell disorders, HIV infection and leukaemia. Rheumatological conditions are not specifically mentioned, though chronic renal, heart, lung and liver disease are. Immunisation rates in patients with inflammatory arthritis are at increased risk of vaccine preventable infections. This risk is increased by immunosuppressive therapy. Vaccination rates for influenza and pneumococcal disease reduces the risk. Severe cases of varicella infection have occurred in patients on biologic therapies. We sought to identify vaccination rates for commonly acquired infections and to ascertain varicella immune status in patients with inflammatory arthritis. 100 patients with inflammatory arthritis were surveyed from June - August 2008. Patients were eligible for inclusion if they were taking corticosteroids and/or disease modifying agents, either alone or in combination with anti TNF therapy. The physician enquired about influenza and pneumococcal vaccination over the past five years and past history of chickenpox/shingles using a standardised questionnaire. Other data collected included age, gender, rheumatological diagnosis, location of vaccination, vaccine prescriber, current treatment and the presence of co-morbid conditions that were indications for vaccination. The questionnaire had previously been validated in two other immunocompromised patient populations. Serum was tested for VZV IgG in patients unsure of their history of chickenpox. Formal approval was obtained from the hospital ethics committee. Statistical analysis was conducted using SPSS.18.0

Results

Baseline demographics/medications and co morbid conditions

One hundred patients with a mean age of 59.6 years (range 18-82years) were interviewed. Demographic data and rheumatological diagnoses are shown in Table 1. Fifty four patients (54%) had separate indications for vaccination of which age over 65 was the most frequent (Table 1).

Rates of influenza vaccine

Forty-two patients (42%) had received the influenza vaccine in the past year. 48 patients (48%) had never received the influenza vaccine (Figure 1). In those on anti TNF therapy 56 (56%) had not received the seasonal flu vaccine in the previous year. Anti TNF usage did not predict increased likelihood of receiving influenza vaccine (p=0.46). Those over the age of 65 were significantly more likely to have received influenza vaccine from their GP in the past year than those under 65 (p<0.01).
Rates of pneumococcal vaccine
81 patients (81%) of those surveyed had never received a pneumococcal vaccination. Only 7 patients (7%) had both an initial vaccine and a subsequent booster at 5 years as recommended in immunocompromised patients13 (Figure 2). Pneumococcal vaccine uptake was not increased in patients on anti TNF agents compared to those on other immunosuppressant regimes (p=.526). Age greater than 65 did not predict pneumococcal vaccine uptake. The presence and increasing number of co morbid conditions predicted both pneumococcal (p<0.003) and influenza vaccine(p<0.03) administration.

Rates of varicella zoster exposure
81 patients (81%) gave a history of prior exposure to varicella zoster, considered to be sufficient evidence of prior infection. 19 patients (19%) were unsure of their exposure history including nine patients on anti TNF therapy. Varicella Zoster Virus (VZV) IgG levels were negative in four of the 19 patients (21%) including one on anti TNF therapy. VZV levels had not been checked in any of the patients prior to commencing treatment.
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Influenza and pneumococcal vaccination are important for patients with inflammatory arthritis. Despite the increased emphasis on vaccinations in the rheumatology literature, immunisation rates in this cohort are sub-optimal. The figures reported are similar to previous reported studies in European countries.

Vaccination advice

Vaccination should be coordinated via the rheumatology clinic. Furthermore, use of vaccination uptake from 26% to 60%.

The ultimate responsibility for vaccine adherence lies with the prescriber of the immunosuppressive therapy and therefore efforts to improve vaccine adherence need to be lead by secondary care physicians. Strategies that engage secondary care providers to improve vaccination uptake need to be examined. As influenza vaccination is seasonal, resources should be made available in clinics for the 6-8 week period post immediate availability of seasonal influenza vaccine prior to onset of the influenza season. The vaccine itself is free this would mean the recruitment of extra staff to administer the vaccine in clinics. Given that booster pneumococcal vaccination need only be repeated after a 5 year period, resources should be targeted at patients attending hospitals in one particular year in an effort to improve vaccination rates. This strategy was successfully applied in diabetic patients resulting in a rise in vaccination uptake from 26% to 60%.

In larger hospitals the creation of chronic inflammatory diseases assessment clinics (CIHAC) are an option. These clinics, led by the infectious disease service, would provide advice on vaccination to all specialties that have patients at risk of infection through their underlying inflammatory disease or its treatments. The provision of a vaccine passport would form part of this clinic. Treatment would be commenced when all vaccinations were up to date as approved by the infectious disease physician. At subsequent rheumatology clinic reviews this passport could then be examined to ensure vaccine compliance was satisfactory. The role of rheumatology nurse specialists to increase vaccine adherence should be further explored especially in the context of education sessions prior to commencing any immunosuppressive therapy. Systems could also be put in place that remind both patients and providers of the need for vaccination. A recent American lead task force found strong evidence that provider reminder systems (electronic prompts/alerts or stickers on paper charts) are effective.

In individuals unsure of their exposure history, a number will be non-immune as demonstrated in our study. Reports of fatal varicella infection in patients on immune-suppressive therapy underscore the importance of accurate identification of those at risk. Varicella IgG levels should be checked in all patients who are unsure of their exposure history. The lack of history and/or serological evidence of infection should prompt providers to immunise these individuals before initiation of immune-suppressive treatments. Secondary reactivation of VZV is also an important issue. Although the outcome of primary disease is worse the burden of secondary (reactivation) disease is greater in the Irish population. Patients, in particular those on anti TNF regimes, and providers should be educated on the commonest source of recommendation. Younger rheumatology patients without other medical conditions may rarely receive the ‘vaccine passport’ would form part of this clinic. Treatment would be commenced when all vaccinations were up to date as approved by the infectious disease physician. At subsequent rheumatology clinic reviews this passport could then be examined to ensure vaccine compliance was satisfactory. The role of rheumatology nurse specialists to increase vaccine adherence should be further explored especially in the context of education sessions prior to commencing any immunosuppressive therapy. Systems could also be put in place that remind both patients and providers of the need for vaccination. A recent American lead task force found strong evidence that provider reminder systems (electronic prompts/alerts or stickers on paper charts) are effective.

Influenza and pneumococcal vaccination are important for patients with inflammatory arthritis. Despite the increased emphasis on vaccinations in the rheumatology literature, immunisation rates in this cohort are sub-optimal. The figures reported are similar to previous reported studies in European countries.
References


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