2014 American College of Physicians Minnesota Poster Competition Winners

Each year, the American College of Physicians encourages its state chapters to invite medical students and internal medicine residents to take part in a scientific poster competition. Residents and medical students submitted 171 posters for consideration at the Minnesota chapter’s annual meeting in Minneapolis November 7, 2014. Each of the internal medicine residency programs in Minnesota (the University of Minnesota, Abbott Northwestern Hospital, Mayo Clinic and Hennepin County Medical Center) were represented. Abstracts also were received from medical students and residents in Minnesota, North Dakota, Iowa and Wisconsin.

Posters (in the clinical vignette, quality improvement and research categories) were judged by practicing internal medicine physicians, internists from the state’s academic medical centers, chief residents and peers. Peer judging was done through “Poster Rounds.” The judges’ criteria included clinical relevance, originality, and written and visual presentation. Special thanks to Charles Reznikoff, MD, and Andrew Olson, MD, for coordinating the competition.

The winners will present their posters at the 2015 American College of Physicians’ annual meeting in Boston in April. Congratulations to all of the participants on their excellent work.

RESIDENT RESEARCH WINNER

Ofatumumab for Rheumatoid Arthritis
A Cochrane Systematic Review and Meta-analysis

BY VIDHU ANAND, MD, SACHIT ANAND, SUSHIL KUMAR GARG, MBBS, ANGELES M. LOPEZ-OLIVO, MD, AND JASVINDER A. SINGH, MD, MPH, UNIVERSITY OF MINNESOTA

Ofatumumab is a unique anti-CD20 monoclonal antibody with its epitope more proximal and distinct from the epitope recognized by rituximab or other anti-CD20 monoclonal antibodies. The proximity of this epitope probably accounts for its high efficiency of B-cell killing and makes it ideal for use in rheumatoid arthritis (RA). We conducted a systematic review and meta-analysis assessing the benefits and harms of ofatumumab in reducing disease activity and pain and improving function in people with RA. To date, there has been no systematic review or meta-analysis assessing ofatumumab for treatment of RA.

Methodology
We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2014, Issue 1), MEDLINE (from 1946), EMBASE (from 1947), ClinicalTrials.gov and the International Clinical Trials Registry Platform (ICTRP) search portal for randomized controlled trials comparing ofatumumab alone or in combination with disease-modifying anti-rheumatic drugs (DMARDs) or biologics to placebo or DMARDs or biologics alone or in combination with DMARDs, with no restrictions regarding dosage. Two authors independently assessed the search results for trial quality and risk of bias, and extracted data. Our search identified three trials with low risk of bias that included 654 patients (383 receiving ofatumumab and 271 receiving placebo) for analysis. A stable methotrexate dose was allowed in all patients.

Benefits
Compared with those in the placebo group, patients in the ofatumumab group were 2.3 times more likely to achieve an...
ACR20 (20% clinical improvement) response (RR 2.3, 95% confidence interval (CI) 1.76 to 3.01). Similarly, patients in the ofatumumab group were 3.1 times more likely to achieve an ACR50 (RR 3.12, 95% CI 1.98 to 4.91). The number needed to treat to achieve an ACR50 response was six. Only one trial found improvement in ACR70 response. A significant reduction in disease activity was found in ofatumumab-treated patients as compared with those in the placebo group. Quality of life also significantly improved with the ofatumumab treatment, as measured by SF-36 summary score (MD 2.48, 95% CI 2.23, 2.73).

Harms
Total withdrawals and withdrawals due to adverse events were not statistically different in ofatumumab and placebo users. However, withdrawal due to lack of efficacy was four times higher in the placebo group as compared with patients treated with ofatumumab (RR 0.24, 95% CI 0.10 to 0.60). The risk of adverse events was 1.5 (95% CI 1.37 to 1.72) in the ofatumumab group as compared with the placebo group. The incidence of serious adverse events, however, was not significantly different in patients treated with ofatumumab and those who received placebo (RR 1.72, 95% CI 0.91 to 3.26). The heterogeneity of the trials was low (I² = 0%).

Conclusion
This systematic review and meta-analysis suggests that ofatumumab is an efficacious and safe treatment for patients with RA as compared with placebo. The adverse events profile appears to be acceptable, but long-term trials and postmarketing surveillance are required to assess sustained efficacy and harms. MM

RESIDENT CLINICAL VIGNETTE WINNER
Pneumonia Masquerading as a Rash

BY CYRIL VARGHESE, MD, KOROSH SHARAIN, MD, MATTHEW KOSTER, MD, AND CLEMENT MICHEI JR., MD, MAYO CLINIC

Mycoplasma pneumonia is a community-acquired infection that usually presents as an upper respiratory tract infection. A constellation of cough, pharyngitis with atypical dermatological and/or mucosal findings should prompt Mycoplasma antibody testing, even if chest X-ray is negative. In addition, having repeated pneumonias as a child or teenager should prompt testing for immunological disorders.

Case
A 34-year-old man developed a sore throat and productive cough followed by a one-week history of generalized rash, subjective fevers, injected eyes and intense myalgias. He did not report any sick contacts or recent travel outside the United States. The patient reported to an urgent care center with these symptoms two days later and was given a Medrol dose pack. His symptoms persisted, so he presented to the hospital for further evaluation two weeks after developing symptoms. His past medical history was significant for six episodes of pneumonia requiring hospitalization since childhood. Social history was significant for regular marijuana use.

On presentation, the patient was vitally normal and stable with a diffuse morbilliform rash over his face, torso and extremities. He had conjunctival injection and crackles at bilateral lung bases. He did not have any oral ulcers or tonsillar exudates. CBC was significant for leukocytosis (WBC: 23.4X10⁹/L with a left shift). However, infectious workup was negative for Anaplasma, Ehrlichia, ASO, Lyme ELISA, RMSF AB, GAS PCR, HIV, Babesia, Adenovirus, CMV, EBV, and measles virus. Rheumatological workup was negative for ANA, rheumatoid factor, PR3, CCP AB, SSA/SSB, Sm AB, Scl 70, Jo 1 AB, Myeloperoxidase. Chest X-ray did not show focal consolidation.

His constellation of symptoms, including cough with sore throat, injected cornea and atypical rash, prompted Mycoplasma pneumonia IgM and IgG antibody testing, both of which were positive. And his history of recurrent pneumonia in childhood and early adulthood warranted further investigation with Complement levels, including C1q, C2, C3 and C4, all of which were low. The patient was discharged on oral doxycycline and showed remarkable improvement of symptoms.

Discussion
Mycoplasma pneumonia usually presents as a self-limiting upper respiratory tract infection that has evolved into pneumonia, with the typical diffuse reticular interstitial findings on chest X-ray. In rare cases, Mycoplasma pneumonia can present with other manifestations including morbilliform rash or mucositis involving the eyes, genital, anal or oral mucosa. Although “walking pneumonia” is a common presentation among young adults, having had repeated bouts of pneumonia during childhood or young adulthood warrants further investigation. Dysregulation of complement activity can predispose patients to autoimmune or infective process. Our patient had a mixed complement deficiency. In general, deficiencies of the early components of the complement pathway (C1q, C4 and C2) result in autoimmune disorders like SLE. On the other hand, deficiencies in late complement components (C3-9) lead to recurrent infections. MM