

Visual Outcomes Prognosticators in Juvenile Rheumatoid Arthritis-Associated Uveitis

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Approximately six percent of all uveitis occurs in children, and the uveitis associated with juvenile rheumatoid arthritis continues to blind 12% of the patients who develop this form for iridocyclitis. With 60,000 to 100,000 children in the United States with JRA, this 12% prevalence of blindness is not a trivial figure. Regrettably, no progress has been made in reducing the prevalence of blindness in this population over the past 30 years.

We analyzed the records of our patients with JRA-associated iridocyclitis seen by Dr. Foster from 1982 to 1995. Sixty-five patients were identified, and forty-three of these met our criterion for a minimum follow-up period of six months after presentation. Forty-seven parameters were analyzed to determine the relative odds of visual rehabilitation among patients with each characteristic. Statistical methods included bivariate and multivariate statistical models.

Patients were cared for on our Service with our previously-described "stepladder" algorithmic approach in aggressiveness to treatment, with topical steroids always the corner stone of the therapy, but with rapid escalation to an oral nonsteroidal anti-inflammatory drug if the patient continued to have episodes of recurrent inflammation as steroids were stopped. Long-term systemic therapy with corticosteroids was employed in a small number of instances, and only when the patient's inflammation could be kept "at bay" with low dose systemic steroid administered every third day. In those instances where inflammation continued to recur despite the use of an oral nonsteroidal and/or every third day systemic prednisone, and immunosuppressant, usually low dose once a week methotrexate, was prescribed.

Visual acuity values were converted into a log scale for analysis of the data, and visual acuity improvement was defined as an improvement of at least one Snellen line in visual acuity from the initial visit to the last follow-up visit. Two dichotomous visual outcome variables were used in the analysis: visual acuity improvement versus lack of improvement; and visual acuity greater than or equal to 20/40 versus visual acuity less than 20/40. Bivariate analysis of variables potentially associated with visual outcome consisted of either chi-square or the Fisher's exact test for discrete variables, and non parametric one-way analysis of variance (Kruskal-Wallis) test for continuous variables. Multivariate analysis of the association of factors with each visual outcome was performed separately using generalized estimating equation logistic regression models; these models allow use of data from both eyes of a patient while accounting for the correlation between fellow eyes. In addition, a linear regression analysis using generalized estimating equalization covariance correction was conducted for the final visual acuity to determine the presence of a correlation between the final acuity and other variables under study. We selected variable for inclusion in the multivariate model if they had an associated P value of less than 0.10 in the bivariate analysis, or if they had been identified as important based on the authors' literature review and clinical impressions. To arrive at the most parsimonious model, the factor with the highest associated P value was eliminated until only those factors with associated P values less than 0.05 remained.

Results: Eighty-six of the patients were female, and mean known age of onset of uveitis was 13 years. Ninety-three percent of the patients had chronic, and 5% of the patients had recurrent inflammation. The mean overall duration of uveitis was 146 months, with females suffering from a significantly longer duration of uveitis than did males ($P < 0.001$). Seventy percent of the patients experienced visual improvement with their therapy. When controlling for potential confounders, male sex, shorter duration of uveitis, older age at disease onset, and a SHORTER DELAY IN PRESENTATION TO A UVEITIS SUBSPECIALIST were associated significantly with visual acuity improvement. Visual acuity at presentation, older age at disease onset, absence of glaucomatous neuropathy, male sex, and USE OF SYSTEMIC NONSTEROIDAL ANTI-INFLAMMATORY/IMMUNOMODULATORY DRUGS were correlated strongly with a final visual acuity outcome of 20/40 or better.

Conclusion: Juvenile rheumatoid arthritis-associated uveitis is a serious disease with a guarded visual prognosis. We hope that increased awareness of its prognosticators will lead to treatment and referral patterns that have the best chance of minimizing the likelihood of visual impairment in patients with JRA.