

## Ocular Autoimmune Disease: An Introduction

C. Stephen Foster, M.D.

The immune system, ordinarily in the "business" of protecting us from harm, generally protecting us from germs and cancer cells, can become deranged, disregulated, with the result being an immune attack on part of our own body. This state of affairs is termed autoimmunity, or immune attack against self.

A number of autoimmune diseases exist, the most famous, perhaps being rheumatoid arthritis. In rheumatoid arthritis the white blood cells of the immune system become disregulated or "confused" and begin to attack the individual's joints. A number of autoimmune diseases exist in which the eye or various parts of the eye may be attacked by the white blood cells. Often the autoimmune disease is systemic, i.e., a variety of organs throughout the body system are being attacked. Examples of such diseases include rheumatoid arthritis, systemic lupus erythematosus, polyarteritis nodosa, relapsing polychondritis, Wegener's granulomatosis, scleroderma, Behcet's disease, Reiter's disease, inflammatory bowel disease (ulcerative colitis and Crohn's disease) and ankylosing spondylitis.

The eye may be affected as a target of immune inflammatory attack in any of these diseases. The eye may, however, in certain instances be the specific and only target affected by certain autoimmune diseases. Some such diseases include ocular cicatricial pemphigoid, Mooren's corneal ulcer, and various forms of uveitis.

Regardless of the form of autoimmunity, any autoimmune disease affecting the eye will require systemic (e.g., oral as opposed to local, topical, ocular) therapy; the components of the immune system reside not in the eye, but rather are systemic, and therefore, regulation of those components will require systemic therapy. Such therapy is typically designed to suppress the overly aggressive immune system, allowing the body to eventually re-regulate itself, with the result often being that after the patient has been kept on systemic medications to suppress the inappropriate immune response for a finite length of time (for example, one year), medication can then be tapered and stopped without recurrence of the autoimmune attack. Sometimes resumption of the attack does occur, in which case the patient must be re-treated.

Ophthalmologists in general are not accustomed to treating patients systemically, and in particular, are not trained to use immunosuppressive drugs in order to control autoimmune phenomena. Many ophthalmologists, however, realize that such treatment is appropriate and indicated for the aforementioned problems, and therefore, the ophthalmologist will collaborate with a chemotherapist who will take responsibility for monitoring and managing the patient's systemic therapy, while the ophthalmologist monitors the progress of the ocular manifestation of the autoimmune attack (inflammation).

In most instances, this collaboration between ophthalmologist and chemotherapist works very well, and our experience in helping ophthalmologists to establish such collaborations and to effectively treat patients with autoimmune diseases affecting the eye has been gratifyingly successful in almost every country around the globe. This represents a major change from just 15 years ago, when many patients still lost all use of one or both eyes from the ravages of improperly treated autoimmune disease affecting the eye.

Our hope for the future is for more selective treatment strategies for specific autoimmune diseases. For example, we have identified a specific protein target for the autoimmune disease, ocular cicatricial pemphigoid. We are cloning the gene for that protein, and expect to begin experiments within 24 months on a strategy that would re-regulate patients' immune systems to that protein without the use of immunosuppressant drugs. It is entirely possible that similar strategies can be applied effectively in other autoimmune ocular diseases. Indeed, a study recently completed by us in collaboration with the researchers at the National Eye Institute in Bethesda, Maryland, indicated that such strategies could, at the very least, reduce the total amount of medication required to keep autoimmune inflammation affecting the retina under control.

Future installments in this section of our Web site will address specific autoimmune eye diseases and will provide additional information and education for patients regarding ocular inflammation and ocular immunology.