



## **Autoimmune Resource and Research Centre**

### **Information Sheet**

## **Uveitis**

Uveitis is a descriptive term that refers to inflammation within the eye. The uvea includes the iris at the front of the eye, the ciliary body, and the choroid toward the back of the eye. Doctors use different terms to describe which portion of the uveal tract is most affected. These terms include iritis, iridocyclitis when both the iris and the ciliary body are involved, and chorioretinitis when the retina is inflamed adjacent to the choroid. A pars planitis describes a form of uveitis in which the inflammation is especially pronounced at the pars plana, an area just behind the ciliary body.

Inflammation can occur anywhere in the body. In general, inflammation is the body's response to an injury. Inflammation always involves the recruitment of white blood cells from circulation to the site of injury. White blood cells normally circulate in the body and are vigilantly looking for an injury such as an infection or a wound. Although, uveitis can result from an infection, for most patients, uveitis is thought to be occurring because white blood cells are responding to a signal that injury is occurring even though no detectable infection is present. Since white blood cells are the major component of one's immune system, often times uveitis is appropriately described as an autoimmune disease, a disease in which the body's own immune system attacks or betrays itself.

The treatment for uveitis will depend upon the location of the inflammation, the severity of the inflammation, and individual differences in the ability to tolerate or benefit from a medication.

The prognosis for uveitis depends upon the severity of the inflammation, the presence of complications such as cataract or glaucoma, and the duration of inflammation. Uveitis has different patterns and may be associated with systemic diseases. These factors can certainly influence the course of the inflammation. Predicting the future vision of a patient with uveitis is not possible currently with exactitude.

Why the body's immune system produces an autoimmune response is currently not completely understood. Genetic factors may be influential, but other factors certainly contribute as well. Current research in our laboratory is focusing on such issues as identifying genes that contribute to a predisposition for developing uveitis, searching for hidden infections that may trigger uveitis, and trying to understand which white cells are actually responsible for producing the inflammation.

Uveitis may be associated with inflammation elsewhere in the body. In most circumstances, patients who have uveitis as part of a disease elsewhere in the body will be aware of that illness. Some of the illnesses are listed in the accompanying table. The majority of patients with uveitis do not have an apparent associated systemic illness. Your doctor may recommend some laboratory test to help confirm that the inflammation is localised only to the eye.

### **Oral Corticosteroids**

Many patients with uveitis may be treated with a hormone known as corticosteroid. This is most commonly taken by mouth in the form of a pill known as prednisone. Normally the body produces the equivalent of about 7.5 mg of prednisone per day. Inflammation is treated with variable amounts of prednisone. The side effects of prednisone depend upon the individual, the dosage of therapy, and the duration of therapy. Some of the side effects associated with prednisone therapy are listed in the accompanying table. Prednisone has the advantage of working quickly to reduce the inflammatory response. It is one of the most potent anti-inflammatory medications known. However, it must be used cautiously because of the numerous side effects. In addition, the benefits from prednisone may diminish with long standing use, as the body seems to adjust to chronic dosage.

It is often recommended that prednisone be taken in the morning since the body tends to produce its own cortisone mostly in the early morning hour. Prednisone is normally taken with food as it can increase acid production and lead to heartburn or ulcers at higher dosages. The body can become dependent upon prednisone. Consequently patients who have been on prednisone for longer periods of time need to reduce prednisone dosage gradually. Patients on prednisone therapy should normally carry a card in one's wallet listing this medication. Patients who have surgery or who are in an emergency situation such as a serious motor vehicle accident will need to receive extra amounts of prednisone temporarily since the body normally responds to stress by producing its own cortisone and its ability to respond to stress disappears when one is taking prednisone by mouth.

Examples of corticosteroid side effects:

- Weight gain
- Facial puffiness
- Fluid retention
- Mood change
- Sleep disturbance
- Acne
- Lowered resistance to infection
- Diabetes
- Easy bruising
- Osteoporosis
- Glaucoma
- Cataracts
- Adrenal suppression
- Ulcers

### **Methotrexate**

Methotrexate is one of the most popular medications in the treatment of moderately severe rheumatoid arthritis, an autoimmune disease in which white blood cells primarily attack the joints. Methotrexate was originally developed as a cancer chemotherapy drug. The doses used to treat autoimmune disease are approximately 1/100 to 1/1000 of the dose used to treat cancer. Methotrexate in general is a safe medication that is well tolerated and can be used for many years without cumulative toxicity. Methotrexate may be taken by mouth or by injection. Most patients prefer to use a pill, although the shot can be better absorbed and may reduce the nausea that occasional patients experience. Methotrexate is usually taken just once a week or on one day of the week. It may produce some intestinal upset, nausea, or diarrhoea on the day of its use. It occasionally causes mouth sores, hair loss, and fatigue can occur as well. Methotrexate will induce miscarriages and should certainly not be used by women who are trying to become pregnant. Methotrexate does not, however, alter one's ability to become pregnant after the medication is discontinued. Methotrexate alters the ability of the body to utilise a vitamin known as folate or folic acid. Side effects of methotrexate can be reduced by taking this vitamin daily. The use of this vitamin probably does not reduce the benefit from methotrexate. Methotrexate can cause cirrhosis or chronic liver damage. Methotrexate should be avoided usually in patients with a history of previous hepatitis or heavy alcohol use. Alcohol intake should be limited while on methotrexate therapy. Patients on methotrexate therapy should receive periodic laboratory tests to be sure that the blood counts are normal and to insure that the liver is not being damaged. On rare occasions, it is necessary to perform a liver biopsy to insure the safety of methotrexate. Some physicians may obtain blood tests to be sure that patients have not been exposed to viruses that cause hepatitis prior to starting methotrexate therapy. A very rare but serious side effect from methotrexate is a lung inflammation. This may require hospitalisation and oxygen therapy for a few days.

Although methotrexate suppresses the immune system, in general colds and flu do not occur more frequently among patients taking methotrexate. Patients on methotrexate are probably more predisposed to develop shingles, a painful infection due to the virus that causes chicken pox. However, this infection remains rare even among patients on methotrexate therapy.

The immune system is probably important in eliminating cancers from the body as they develop. Methotrexate may interfere with the body's ability to perform this so called immune surveillance. However, if

cancers are more common among patients who take methotrexate, the increase is very slight and may even be non-existent.

Individuals who develop a temperature greater than 101 while on methotrexate should notify one's physician. If elective surgery is being considered while on methotrexate, the methotrexate is sometimes held so as not to impair wound healing or increase the likelihood of developing an infection at the time of the surgery.

### **General Guidelines in the Treatment of Uveitis**

At the uveitis clinic at the Casey Eye Institute, we recognise the following guiding principles in providing advice to the patient:

1. Everyone is different. While your physician may advise you that a certain medication is generally safe or well tolerated, an individual's experience might vary. Similarly, trying to determine prognosis or outcome is extremely difficult for an individual patient. Therapy, consequently, must be individually tailored to a patient's needs. Designing the best tolerated and most effective therapy may require some trial and error because of the uniqueness of each patient.
2. Treating inflammation is like dousing a fire. Medications are normally used frequently at relatively high doses initially to try to reduce inflammation. However, many types of inflammation resist being extinguished, that is, the flames cannot be put out completely. The treatment is designed to reduce damage from the inflammation. When the treatment appears to have reduced or eliminated the inflammation completely, the medication is usually stopped gradually to ensure that the flames are indeed extinguished.
3. The least amount of medication is the best amount of medication. All medications have potential toxicity. The optimal dosage of the medication is the least amount which succeeds in controlling the inflammatory process.
4. The punishment should fit the crime. Various medications are associated with different degrees of potential risk. In general, the aggressiveness or degree of risk which is appropriate depends upon the severity of the inflammation and the degree to which it impairs the patient's activities of daily living.
5. Choosing the right therapy is like selecting what to eat from a restaurant menu. The physician's responsibility is to describe options, their advantages, and their risks. The best choice of therapy is very much a matter of personal preference based on an understanding of the advantages and disadvantages for each approach.
6. It is not always possible to determine how successful therapy is. When one takes a medication and visual acuity does not improve, it is possible that vision may have worsened significantly if the medication had not been taken. Conversely if one takes a medication and vision improves, it is conceivable that the improvement may have occurred spontaneously without the use of the medication.
7. Immunosuppressive medications do not work immediately. In general medications such as methotrexate, Imuran, cyclosporine, and Cytoxan take several weeks before benefit from them is appreciated. Corticosteroid medications tend to work much faster in reducing the inflammatory response.

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