PERIODIC ophthalmia, or moon blindness, is the most common cause of blindness in horses and mules.

It is primarily a recurring inflammation of the inner portions of the equine eye and its associated structures. Non-acute stages follow acute attacks. One eye alone or both eyes together or alternately may be affected. Acute attacks begin suddenly. The time the acute symptoms lasts varies among animals and in the same animal. The extent of damage to the eye caused by one acute attack also may vary.

This disease has occurred in most of the countries of the world except Australia. It occurs often in the eastern half of the United States and much less frequently in the West.

Horses of all ages are susceptible. Most cases are in animals that are mature or are approaching maturity. The disease frequently occurs sporadically in a given group of horses.

Mules seem less susceptible than horses.

The diagnosis of periodic ophthalmia is based on the recognition and evaluation of several factors, the most important of which are the history of the animal with regard to previous eye disease; the nature of the abnormal changes; and the permeability of the blood vessels within the eye. If the animal's history is known, a positive diagnosis is reached much more easily because of the characteristic attacks and the frequent appearance of the disease in other animals in the locality.

The acute stage is essentially a marked inflammation of the iris and ciliary body. The ciliary body is deep
within the eye—behind the iris—and so cannot be seen. Outward signs are detectable, however. Some occur in other diseases of the eye and must not be taken in themselves as being diagnostic. A complete examination of the eye is indicated when any abnormality is observed. Knowledge of the structure of the eye is essential in making a diagnosis. In acute iridocyclitis—inflammation of the iris and ciliary body—the eyelids are usually inflamed, sometimes swollen, and very tender. An excessive quantity of tears runs down the face from the corner of the eye. The cornea—the outer surface—may look cloudy or milky if the inflammation is severe.

Practically all cases show some degree of corneal vascularization (penetration of blood vessels toward the center of the cornea). In the normal eye, no blood vessels occur in the cornea. If the horse is placed in a dark stall and examined with a strong light that has a narrow beam, it will be observed that during acute iridocyclitis the pupil is contracted and fails to dilate normally.

During acute symptoms an exudate (abnormal discharge) forms within the eyeball. The exudate contains clotted blood, white blood cells, and sometimes red blood cells. The exudate develops behind the lens and may not be seen unless some enters the front of the eye. The acute stage may last several days to several weeks.

Many of the acute inflammatory symptoms usually subside after the first attack. The eye outwardly may look normal again. An examination with an ophthalmoscope, however, usually discloses a sprinkling of small, opaque spots or a diffuse cloudiness in the fluid behind the lens. Small pieces of the iris may adhere to the lens capsule. The eye looks more abnormal after successive acute attacks. Eventually the damage to the tissues of the eye persists permanently and is of greater extent. Then serious loss of vision results, and the animal's sight remains impaired.

The final stage is almost complete blindness. No single case of periodic ophthalmia can be described as being average in terms of degree of severity and frequency of acute attacks, but it is usually true that once the eye has become affected, further attacks and blindness may occur later. Total blindness can result from the initial attack if the acute reaction is severe and long. Regardless of the variability in the acute symptoms and in the number of previous acute attacks, an eye that has once been affected differs from a normal eye that has never been affected. That difference is the increased permeability of the vascular system of the iris, and particularly the ciliary body.
Equine Periodic Ophthalmia

of the affected eye. This subtle but definite pathological feature can be denoted by the intravenous injection of fluorescein, a chemical dye, and by observing the emergence of the dye into the eye, as seen with the aid of an ultraviolet light. Only eyes which have been affected with iridocyclitis will allow the dye to become visible. Normal eyes prevent the penetration of the dye into their fluids. This technique has certain hazards and should not be undertaken without experience. It is indicated only when no other manifestations of the disease are detectable and a question of previous periodic ophthalmia is important.

The cause of periodic ophthalmia is not clearly understood as the disease is not yet reproducible under controlled experimental conditions.

Many theories as to its possible infectious, hereditary, parasitic, hormonal, nutritional, and allergic nature have been proposed. Most of these have been extensively studied without finding conclusive positive evidence of the exact cause. The sum of knowledge regarding the causes indicates that a combination of conditions is involved. Research studies since 1943 have emphasized the relationship between vitamin B₂ (riboflavin) and its effect in the prevention of periodic ophthalmia. More recently, reports by many investigators have suggested that the leptospiral micro-organisms may play a role in this disease of horses.

The microscopic lesions seen in equine eyes affected with periodic ophthalmia have been recognized as being similar to those seen in experimental animals that have been fed a diet deficient in vitamin B₂. Attempts to reproduce the naturally occurring condition in horses by feeding them rations containing little of this vitamin have not succeeded.

Evidence obtained by T. C. Jones and his coworkers at the Army Remount Depot, Front Royal, Va., however, indicated that the daily addition of a small amount of this vitamin to the ration of horses with normal eyes markedly lowered the number of new cases. This finding has led to the use of riboflavin as a supplementation to help prevent new cases of the disease. Adding the vitamin to the feed of animals that had periodic ophthalmia did not prevent further attacks and did not alleviate the symptoms in studies done by the Army.

Foreign and North American reports indicate that many horses having a history of periodic ophthalmia also have a much higher content of blood serum leptospiral antibody than do horses with normal eyes. This has aroused considerable interest in the possible relationship between the leptospira group of micro-organisms and periodic ophthalmia. Attempts to reproduce periodic ophthalmia in horses by injection of cultures of leptospira have not been successful.

Treatment of periodic ophthalmia is primarily one of reducing the ill effects. Prompt attention by a veterinarian to the attacks as they occur may prolong the sight.

The symptoms can be alleviated in several ways: By cold applications in the form of compresses to the eye; the administration of drugs to dilate the pupil in order to prevent adhesions between the iris and lens or cornea; and mild laxatives to lower the pressure within the eyeball.

The animal should be placed in a dark stall and kept out of strong sunlight during the acute stages. We know of no successful treatment for advanced cases in which extensive, irreparable damage has occurred.

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