OCULAR BRUCELLOSIS

F. J. Damato M.D., D.O. (Oxon), D.O.M.S. (Lond.), F.R.C.S.
Lecturer on Ophthalmology, Royal University of Malta.

Research work and clinical observations have proved long ago that the Brucella group of microorganisms may give rise to pathological changes in the eyes.

Fabian in 1912 performed experimental work on guinea-pigs and described a deep Keratitis from which he was able to isolate these germs. In 1928 Orloff described the pathological changes in eyes of guinea-pigs which died of Melitensis infection. These findings, both pathologically and clinically, were similar to those occurring in ocular tuberculosis.

Ocular signs and symptoms in man were first described by Lemaire in 1924. He reported of an optic neuritis in a patient suffering from acute brucella infection.

Infection of the body usually follows the ingestion of contaminated food such as milk, cheese and milk products. In veterinary surgeons and in people who attend to cattle, the microorganisms may enter the body through cracks in the skin and through mucous membranes. The ocular tissues are reached through the blood stream. In cases of inflammation of the cornea and of the conjunctiva the possibility of a direct infection of the eye from the outside cannot be excluded.

The incidence of the infection of the eye by brucella is not easy to estimate because of the difficulty in diagnosis. A good number of reported cases, occurred during the course of brucellar infection. However in other cases , the ocular signs and symptoms predominated, while the general signs of the infection were almost absent. The general impression is that the incidence of ocular manifestations due to brucella infection is much higher than suggested by the reading of literature.

All sorts of eye conditions can be met with during the course of Undulant Fever, and it is impossible to describe one condition which may be said to be typical of Brucellosis.

The signs and symptoms are those found in an inflammation of the structures of the eye, that is, lacrimation, photophobia and disturbance of the visual function. Failing vision in one eye may be the first symptom to attract attention to the condition of the eye. Both eyes might be attacked. Double vision may be another complaint.

All the structures of the eye may become affected in various degrees. Oedema of the lids is a common finding. The conjunctiva may show an icteric tinge. A conjunctivitis usually accompanied by inflammation of the cornea is not infrequent.

Although the cornea may show all sorts of inflammatory processes and ulcerated forms, it is the least affected of the ocular structures.

The uvea is very frequently attacked. The inflammatory processes may prevail in the anterior uvea and give rise to Iritis and Iridocyclitis. The patient complains of photophobia; the eye is red and on examination posterior synechiae and deposits of the posterior surface of the cornea are found. The cause may be acute, subacute or chronic, on the other hand the posterior segment of the uvea may become predominantly involved and a choroiditis or total uveitis is produced. Examination of the fundus may reveal changes in the retina. Haemorrhages and oedema may be noticed around the disc and macular region. The retinal haemorrhages may be small or so large as to fill a good portion of the vitreous. Secondary glaucoma may sometimes follow.

The incidence of lesions of the optic nerve is high, probably because of frequent concomitant general and neurolo-

gical signs. These signs are indicative of meningeal and encephalic inflammatory processes. The optic nerve may show a neuritis, or a retrobulbar neuritis, papilloedema and optic atrophy.

Optic neuritis may appear in the course of early or late meningitis but it may occur in the absence of inflammation of the meninges. There is oedema of the nerve head and blurring of the disc margin. Visual acuity is impaired. The neuritis is probably due to the action of toxins on the nerve fibres.

Papilloedema is usually bilateral; it may be found in the absence of other definite signs and symptoms. No impairment of vision may follow, but optic atrophy has followed in some cases. The oedema of the nerve head is of an inflammatory nature, rather than mechanical, and usually accompanies the encephalic form of Undulant Fever.

Atrophy of the optic nerve followed some cases of optic neuritis, papilloedema and retino-choroiditis. The disc appears grayish white, the margins are slightly blurred and there is a shallow excavation.

When the inflammatory process extends to the meninges or brain, the cranial nerves are often involved. This is shown by paralysis of several muscles. The muscle most frequently attacked is the external rectus on one or both sides. The patient is unable to move his eye outwards and complains of double vision. The paralysis of the 6th. nerve is very rarely associated with paralysis of the 7th. and 10th cranial nerves. The muscular paralysis generally improves.

Since the eye attacked by the Brucella microorganisms is never destroyed to such an extent that enucleation is necessary the description of pathological findings is rather incomplete. Few cases have been reported. The changes in the eye are polymorphic and there is no characteristic picture. The histological findings are similar to those found in other organs especially the meninges. There is a preference for a lymphohistioid infiltration of the vessels.

Very few patients with ocular brucellosis present symptoms of active Undulant Fever. This is the reason why diagnosis is often so difficult. A careful history is very important. It may reveal the drinking of raw milk or contact with infected animals or it may provide evidence of past infection with brucella. Besides the history, the diagnosis can be based on laboratory findings, such as blood culture, sero-agglutination, opsonic index, and skin test. Of all these, only a positive blood culture is of an unquestionable value. In all cases of obscure origin, especially of uveitis, brucellosis should always be considered as a possible cause of the ocular infection.

The modern treatment of ocular brucellosis is governed by two important considerations. The penetration of some antibiotics such as Chloromycetin and Aureomycin, into the tissues of the eye is very poor. This may be the reason why, in ocular manifestations results have not been very encouraging, as in the treatment of the general symptoms of the disease.

The other consideration is that as the eye is particularly subject to allergic phenomena, necessarily, the treatment has to be to a certain extent, of an immunitary type. As the intravenous vaccine has been found effective in the treatment of Undulant Fever, it has also been tried in ocular brucellosis. In some cases it has produced a flare up of the inflammatory processes and has increased the damage of the eye. It has been found wise to proceed with caution and use very small doses of the vaccine.

It is to be hoped that in the future, the best results will be obtained by the judicious use of antibiotics, chemotherapeutics and vaccines, employing the one or the other according to seriousness of the ocular condition and the course of the disease.