(6) A small uncovered area appears at "y" (Fig. 3). A stitch from the adjacent conjunctiva biting firmly into flap "x," serves to obliterate this area and at the same time to prevent encroachment of the flap "x" on to the raw corneal area.

This operation has been found easy to perform, the appearance at the end of the operation satisfies one's sense of surgical aestheticism, and up to the time of this report—a period of six months—no recurrence has yet reported back to hospital.

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SELF INFLICTED CONJUNCTIVITIS*

**An account of cases produced by the
jequirity and castor oil seeds**

BY

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AN artificial conjunctivitis produced by the deliberate introduction of an irritant into the eye is seldom seen in civil practice. The condition is so unusual that it is doubtful if most ophthalmologists would readily diagnose it on seeing a case for the first time. With experience, however, the diagnosis can be made with certainty on immediate clinical inspection, as most cases present a very characteristic appearance. Indeed the diagnosis can often be made in spite of a superadded secondary bacterial muco-purulent conjunctivitis complicating the clinical appearance. A recent paper by King (1942) and the subsequent correspondence it involved shows that the condition is not well recognised and prompts me to record an account of a number of cases recently seen by me. These cases seem to be of particular importance in that in two of them a confession was elicited as to the nature of the irritant substance used, and the cases in which a confession was obtained in no way differed from those in which interference was stoutly and persistently denied.

In civil life if a patient is in hospital, he is at a financial disadvantage and in any case he prefers his home conditions to those he meets in the most comfortable and up-to-date hospital. In the army, however, conditions are different. A soldier loses no pay by being in hospital when on active service and the comforts of hospital life are very considerable compared to those of life in

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an active unit, especially in a jungle area which furnishes few of the usual comforts and amenities found in more civilized surroundings. Furthermore hospitalization affords a ready means of escape from unpleasant experiences and if medical officers are not conversant with the condition, a self-inflicted wound or conjunctivitis may be the means of being transferred to a comfortable depot, or of obtaining sick-leave. With the enormous expansion of the army it is not surprising that there are a few men enlisted who are unhappy misfits, or have criminal tendencies. In this series of cases no attempt has been made to ascertain the psychological background.

Duke-Elder (1938), to whom I am indebted for most of the references, records the following substances as having been used: sand, ashes, aniline pencil, pepper, soap; tobacco, ipecacuanha, the juice of castor oil beans, and the pathological secretions of trachoma. Elliot (1920) mentions that corrosive sublimate and lime are sometimes used by malingerers in India. In the present series the jequirity seed was definitely used in one case, and the castor oil seed in another, both of whom made a confession. Bridgeman (1944) has seen cases in which a lighted match head had been used and others due to the introduction of anti-gas ointment. It is probable that mustard and chillies are other substances occasionally used. In connection with the introduction of lime into the eye it is interesting to note that Leber (1895, 1900) described the condition produced as a new disease of unique pathology and named it conjunctivitis petrificans. Other cases were reported by Reif (1900), Koster (1901), Posey (1903), Saemisch (1904), but the true aetiology appears to have been elucidated by Sidler-Huguenin (1913), Wirths (1918) and Chailous (1929). In these cases plaques of the carbonate, phosphate, or sulphate of lime were found embedded in the conjunctiva, surrounded by an inflammatory reaction with considerable fibrous tissue formation.

In the present series of cases a confession was obtained from two; one had used castor oil seed, the other jequirity seed.

The castor oil plant

The castor oil plant, *syn.*, *palma christi*, *ricinus communis* belongs to the natural order euphorbiaceae; sub-order crotonae (Encyclopaedia Britannica 9th Edition) and grows in most tropical countries. It varies from a shrub to a tree 30 to 40 feet high. The fruit consist of a trilocular capsule covered externally with soft yielding prickles. It is green in colour and contains three seeds. The seeds (Fig. 1) vary in size but are usually about $\frac{3}{4}$ inch long, $\frac{1}{2}$ inch broad, and $\frac{1}{4}$ inch thick. They are oval in shape and have

a hard shiny brown capsule, on which is a symmetrical design in lighter and darker shades of brown. Inside is a fairly hard homogeneous yellow substance. From this is expressed the crude oil, which in India, is used for illumination as well as for purgation.

That the inner seed is capable of producing a conjunctivitis is shown by the following personal experiment :

April 13, 1943 (Evening).—A castor oil seed was removed from its outer case and cut in half. In front of a mirror the left lower lid was everted and the cut surface of the seed was held against the tarsal conjunctiva, care being taken to elevate the eye so as

FIG. 1.

Castor oil seed.

not to endanger the cornea. At the end of fourteen minutes continuous application the conjunctiva was seen to be slightly hyperaemic over the area where the seed had been applied. At this time there was no pain, epiphora or discomfort of any sort.

April 14, 1943.—On waking in the morning the lids were found to be sticking together but the discharge was only slight. The area of damaged conjunctiva was somewhat more hyperaemic and had spread slightly in all directions. That evening some discomfort was felt in the eye, and on inspection there was a pseudo-membrane in the area where the seed had been placed. The lower half of the conjunctiva, both lid and bulbar, was hyperaemic, but in striking contrast the upper half was its normal colour.

April 15, 1943.—Condition much the same. The day's work was done with some discomfort. Argyrol 10 per cent. drops were occasionally instilled. There was a small amount of muco-purulent discharge.

April 16, 1943.—The pseudomembrane came away leaving a slightly ulcerated, but considerably hyperaemic conjunctiva beneath.

April 19, 1943.—Eye healed.

The jequirity plant

The Jequirity plant or *Arbus precatorius*, syn: *latur mani* (Assam), *kunch* (Bengal), *gunja* (Hindi), *crabs' eyes*, is a small shrub of the order *leguminosae* (Kanjilal, 1938). The seeds are spherical, about $\frac{1}{4}$ inch in diameter, and are usually of a brilliant shiny scarlet colour with a small shiny jet-black cap extending over a quarter of the surface. They are extremely hard. Rarely

FIG. 2.

Jequirity seed.

they may be white with a black cap, or sometimes wholly white or wholly black. Inside the outer capsule there is a hard yellowish homogeneous substance. The seeds (Fig. 2) are said to weigh constantly about 1.75 grains and are used by Indian jewellers as their lowest unit of weight. They are commonly called *rutti* or *gumchi* seeds. Tandon (1943) states that he has seen the decapsulated seeds packed into the cervical canal in a woman who came to post-mortem examination following abortion. The whole lining of the cervical canal had sloughed.

In order to demonstrate its irritant nature a seed was removed from its outer covering and cut in half. The cut surface was applied to the lower tarsal conjunctiva of the right eye of a rabbit, one evening, for several minutes duration. Next morning there

was seen to be a considerable muco-purulent discharge, the conjunctiva was very red, both above and below, and was sloughy in the area where the seed had been applied. The other eye was normal.

Clinical signs

Of 31 cases seen the condition was unilateral in 19 (8 right eye only, 11 left eye only), and bilateral in 12. The malingerer usually spends considerable thought upon his condition, which probably explains why the signs were bilateral in such a high proportion of the cases. All were Indian other ranks, none of whom had gained N.C.O. rank. They came from widely differing units, situated at considerable distance from each other. It is interesting to note that the four British cases described by King were likewise

FIG. 3.

men who were still privates. It is thought that the majority of the cases were due to the use of the castor oil or jequirity seed.

Typically the patient keeps the eye closed and frequently shows a very guilty and sulky appearance. He is unco-operative in responding to his vision test and will refuse to count the dots on the illiterate test type or says the wrong number of dots all the way down the board.

Three main clinical types are seen, as follows:—

Sub-acute type (Fig. 3).—The eye on examination shows considerable epiphora with a little muco-purulent discharge. On evertng the lower lid there is a sloughy area about a $\frac{1}{4}$ by $\frac{1}{4}$ inch on the tarsal conjunctiva extending into the lower fornix.

Sometimes there is an identically shaped area immediately opposite on the bulbar conjunctiva as if a piece of irritant substance had been placed inside the lower lid which had then been allowed to regain its natural position thus bringing the irritant into contact with the bulbar conjunctiva. Surrounding the necrotic sloughy or pseudomembranous area is seen considerable hyperaemia and the whole of the lower half of the conjunctival membrane is oedematous. In contrast the upper half of the conjunctiva is striking in its normality.

Hyper-acute type (Fig. 4).—In this type in which the irritant has been allowed to remain in the eye for a longer period there is

FIG. 4.

seen to be intense epiphora, moderate discharge and the lower fornix contains a large slough. The whole of the conjunctiva is oedematous as are also the lids. The upper half of the conjunctiva is hyperaemic but to nothing like the extent of that seen in the lower half. There is a striking difference between the upper and lower half of the conjunctiva. In some cases the whole of the lower fornix is a sloughy mass. A pseudomembrane is occasionally seen on the upper tarsal conjunctiva.

Chronic type (Fig. 5).—In these cases the chemosis of the conjunctiva, and oedema of the lids is absent and the upper half of the conjunctiva is normal. In the lower fornix is seen a patch of chronic conjunctivitis with a varying amount of fibrosis. There may be some degree of symblepharon. This is the condition seen when the case is nearly healed.

Bridgeman (1944) informs me that there is yet a different method of using the jequirity seed which gives a still different clinical

FIG. 5.

picture. The seeds are ground up into a powder and placed in a small bag and soaked in hot water. The man now lies down on his back and places the bag on his closed lids. The irritant soaks out producing a fairly intense chemosis of the lids and a diffuse conjunctival engorgement with a varying degree of corneal haze.

Pathology

During the last war the histology of many cases of self-inflicted conjunctivitis was investigated by Fromaget and Harriet (1916), Cosse and Delord (1917), Pereyra (1917), Semperi (1917), Kraut-schneider (1918), Morandi (1922), Miceli (1922), and others. The essential features seem to have been the absence of pathogenic bacteria, the usual presence of eosinophilia and the presence of minute particles of the foreign substance. In the present series a number of smears from the conjunctiva of the more recent and acute cases were made.

Characteristically the slide is packed with polymorphonuclear leucocytes to the exclusion of almost all other cells. The cell membrane gave the appearance of not having been in contact with bacteria or their toxins, for almost all the cells were well formed, stained well and appeared as if they came from normal blood. There was a striking absence of degenerate and dead leucocytes, nor could any pathogenic bacteria be found except in one case. Cultures were made from a few of the recent and acute cases and in only one case was a growth of abnormal bacteria obtained. A preponderance of eosinophils was not noted. In

one case in which there was a super-added acute mucopurulent conjunctivitis, Gram-negative intra and extra-cellular diplococci were seen. Soon after examining the slide on my return to the ward I was informed that the patient had confessed to having put jequirity seed into the eye, and indeed jequirity seeds were found hidden in his pillow case. The patient did not show signs of urethral gonorrhoea. The case showed that the condition could be diagnosed quite easily in spite of a superadded bacterial infection.

Diagnosis

It is unlikely that an acute inflammatory process in the conjunctiva could confine itself entirely to one part of that membrane. The flow of the tears and the movements of the lids in blinking makes this impossible. In any acute bacterial conjunctivitis the upper half of the conjunctiva is almost as much injected as the lower. Another striking feature of these cases is the nature of the discharge. The lids are not stuck together and covered with the typical yellowish discharge of an acute conjunctivitis. The actual discharge of the lids is scanty especially in comparison with the sloughy area on the conjunctiva. In contradistinction the amount of epiphora is excessive and is more in harmony with an inflammation of the cornea, iris or lacrymal sac. As would be expected sulphanilamide has no effect upon the clinical picture.

Another point in the diagnosis is the rapidity with which the condition heals with appropriate treatment. If the medical officer is not conversant with the condition it is remarkable how the eye will suddenly flare up on the patient learning that he is to be discharged from the hospital the next day.

Corneal involvement is uncommon and was only seen in two cases, in one of which considerable nebula formation resulted.

Differential diagnosis

Dacryo-cystitis with purulent regurgitation into the conjunctival sac will produce a hyperaemia of the lower half of the conjunctiva in contradistinction to the upper half, but no slough is ever produced and the condition is readily diagnosed by pressure on the lacrymal sac. Trauma is easily excluded. Patients will often say that they accidentally struck their eye on a branch of a tree. This accident would, however, show a lesion of the skin of the lids or a corneal abrasion. It is quite impossible for a branch of a tree to injure the lower fornix without injuring the cornea or the skin of the lower lid.

In membranous conjunctivitis the patient is usually ill with some fever and the conjunctival smear and culture will show

pathogenic organisms. The sulpha group of drugs markedly improve those cases due to pneumococci or streptococci, while in the self-inflicted cases they are without effect. Cases of chronic or recurrent pseudomembranous conjunctivitis have been reported by Hulme (1863), Knapp (1883), Critchett and Juler (1883), Howe (1897), de Schweinitz (1924), Castroviejo (1935), in which a pseudomembrane persisted or recurred many times over long periods of many months and were extremely persistent to treatment. Adequate treatment of self-inflicted conjunctivitis cures the condition very rapidly.

Treatment

The lids and conjunctiva are cleaned up once or twice a day with normal saline, and a bland ointment instilled to prevent symblepharon. Provided there are no fresh applications of the irritant substance, the symptoms and signs will clear up in 3 to 10 days. Corneal involvement will require appropriate treatment.

Summary

1. The clinical signs of self-inflicted conjunctivitis due to the introduction of the jequirity and castor oil seeds into the lower conjunctival sac are described.

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