

BONAPARTE'S MILITARY CAMPAIGNS IN EGYPT AND SYRIA AND THE MEMOIRS, ON THE ENDEMIC OPHTHALMIA OF EGYPT BY D. J. LARREY

G. Balanikas^{1,2}, D. Peironidis¹, C. Georgiadou¹, S. Maloutas¹,
S. Diafas¹, D. Mitritsas¹, D. Christodoulou²

PURPOSE

This presentation examines the description by the military physician Dominique Jean Larrey (Fig. 1) appointed Chief Surgeon by Napoleon Bonaparte during his campaigns to the East. Larrey describes his experiences from the outbreak of ophthalmia, tries to cite the causes for the condition and also to prevent the contagion to the soldiers. Dominique Jean Larrey wrote a work titled: MEMOIRS OF MILITARY SURGERY AND CAMPAIGNS OF THE FRENCH ARMIES. In the chapter titled 'Campaigns in Egypt and Syria' a part with title: MEMOIR On the endemic Ophthalmia of Egypt' is included, which has detailed descriptions of signs and symptoms of the disease.



*Fig. 1 Dominique Jean Larrey (1766 - 1842).
Potraiti by Anne - Louis Gorodet de Roussy - Trioson,
Musee de Louvre Paris*

*1. A' Ophthalmologic Clinic, Aristotle University of
Thessaloniki, AHEPA Hospital
2. Laboratory of History of Medicine, Medical School,
Aristotle University of Thessaloniki*

*Corresponding author: G. Balanikas
e-mail: dioskouridis@yahoo.com*

Setting

The events took place in the Middle East, in Egypt during the military campaign of Napoleon Bonaparte (1798-1801).

Methods

We used the American edition of Dominique Jean Larrey's work: MEMOIRS OF MILITARY SURGERY AND CAMPAIGNS OF THE FRENCH ARMIES, published in Baltimore in 1814, USA. This book includes a chapter titled 'CAMPAIGNS IN EGYPT AND SYRIA' which has a part of 20 pages dedicated to the disease, titled 'MEMOIR On the endemic Ophthalmia of Egypt'. (Fig 2, 3, 4)

Results

Dominique Jean Larrey did not know the nature and the

causes of the disease and he tried to confront it with the medical knowledge of his era. He established some meters to prevent the contamination and the disability of the diseased soldiers. He suggested avoiding of the sunlight, the humidity, the excessive consumption of wine and spirituous liquor and coffee and bad quality of the food. He suggested also the frequent washing of the eyes, the face and the covering of the head.

Introduction

Dominique Jean Larrey (1766 - 1842) was the Chief of Surgeons during the campaigns and battles of Napoleon Bonaparte. Larrey was a very skillful surgeon who established the modern principles of military surgery and served medicine with selflessness and loyalty. Larrey for his contribution to the care and treatment of the soldiers was awarded with the title of Baron. Napoleon giving him

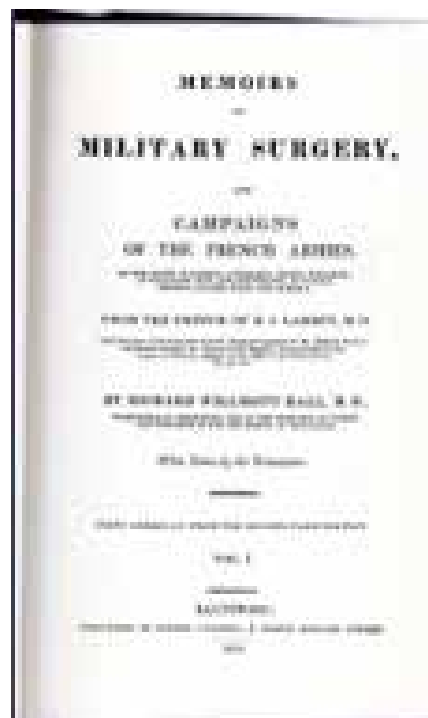
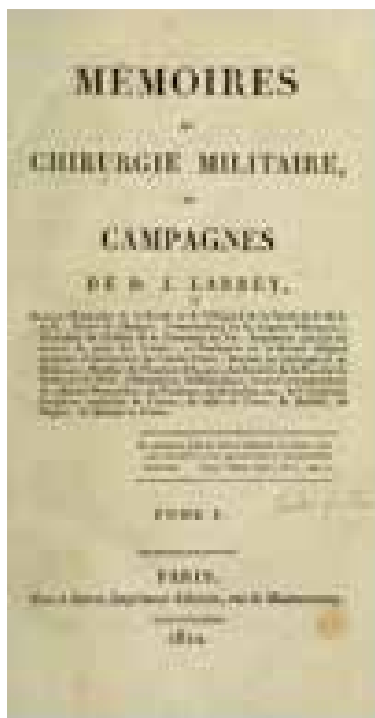


Fig. 2,3 The French (1812) and the American edition (1814) of the Larrey's Treatise: MEMOIRS OF MILITARY SURGERY AND CAMPAIGNS OF THE FRENCH ARMIES

an award said: *C'est L 'Homme le plus vertueux que j' aie connu*, (He is the most virtuous man I have ever know).

These words are inscribed on Larrey's tombstone in Paris (Pere-Lachaise).

Emperor's respect to his Chief Surgeon

Napoleon's statement about his physician says: 'Larrey was the most honest man, and the best friend to the soldiers, I ever knew. Vigilant and indefatigable in his exertions for the wounded, Larrey was seen on the field of battle, after an action, accompanied by a train of young surgeons, endeavoring to discover if any signs of life remained in the bodies. In the most inclement weather and all times of night or day, Larrey was to be found among the wounded. He scarcely allowed a moment's repose to his assistants, and kept them eternally at their posts. He tormented the generals and disturbed them out of their beds at night whenever he wanted accommodations or assistance for the wounded or

sick. They were all afraid of him, as they knew he would instantly come and make a complaint to me. He paid count to none of them, and was the implacable enemy of the army contractors...' (fig. 5).

Bonaparte's military campaign to Egypt and Syria and J. D. Larrey duty

Bonaparte's campaign in Egypt started at 1st of July, 1798 in Alexandria. And until September of the same year Napoleon took the control of Egypt and he headed to Syria. His campaign to the Middle East lasted around three years, until 1801. Larrey's memories were from this period and he confronted with the exaggeration of ophthalmic infections between the soldiers but also the civilians and he describes signs, symptoms and therapy for the victims of epidemic.

He devotes two chapters for the 'Ophthalmia': MEMOIR On the endemik Ophththalmia of Egypt (p. 110-126), and SECTION II (p. 126 - 130).

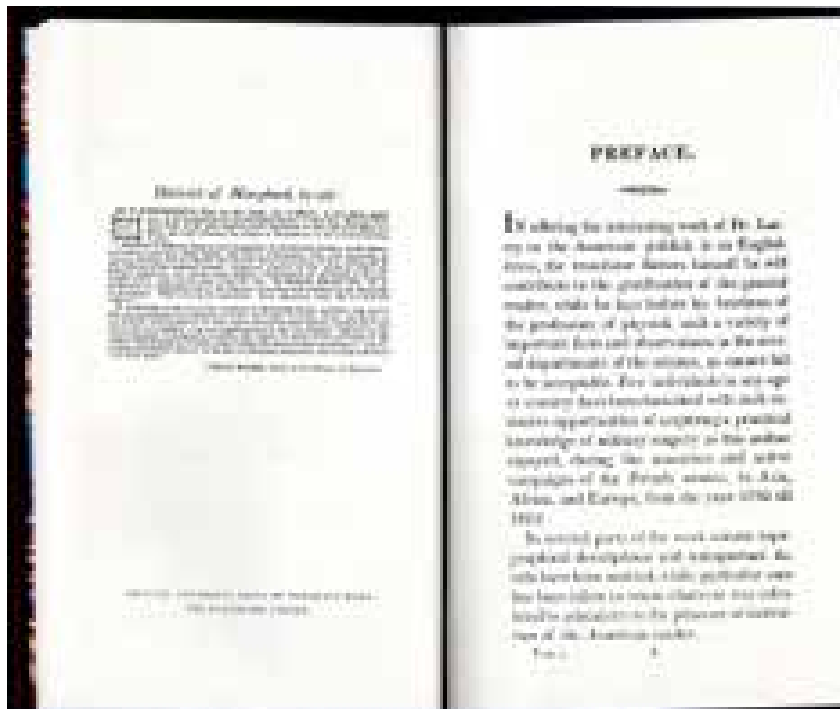


Fig. 4 The page with the preface by Richard Willmott Hall M.D.



Fig. 5 Napoleon gives his hand to Dr Larrey

His Observations

The first chapter starts describing the invasion of symptoms and the final result of the loss of the sight:

With his own words:

‘...the eyes being suddenly affected by the vivid rays of the sun, whether direct, or reflected by the white sands of Egypt, are the parts which first sensible of the effects of a suppression of cutaneous perspiration: the result of this is a long continued ophthalmia, which, in many cases is succeeded by total loss of sight...’

And for the clinical signs: ‘...The following were the symptoms observed by us: swelling of the eyelids, the conjunctiva, and sometimes of the coats of the eye: very acute local pain, compared by the patient to the sensation occasioned by the presence of grains of sands (this caused by the distended vessels); defect of vision and difficulty of encountering vivid light. To these incipient symptoms succeed violent pains in the head, vertigos, and insomnia. The secretion of the lachrymal glands is diminished, becomes acrid, and irritates the eye lids and puncta lachrymalia. All these symptoms increase in violence, and are sometimes followed by fever, and even by delirium. The disease arrives

at its height in three or four days, sooner in some instances, later in others. Like other inflammations, it has its stages or periods. (Larrey describes here vividly the results to the ophthalmic surface of the irritation caused by the climate, the environment and the infections around the Nile).

...Sometimes it is less acute, and of a serous character: in this case it is more gradually developed, and causes less pain; the redness is slight, and the vessels of the conjunctiva are yellowish; there is, in this case, edema, or swelling of the eyelids, and a redundancy of tears; the patient acquires a swarthy hue; the tongue becomes foul, from which circumstance this ophthalmia may be regarded as symptomaitick or serous.

...The termination of the ophthalmia is ‘various’. When it is inflammatory, and is trusted solely to the resources of nature, about the sixth or seventh day many parts of the internal surfaces of the eye-lids, and of their angles, suppurate. These ulcerations gradually extend to the conjunctiva, and to the transparent cornea, and frequently perforate it. Some times the cornea bursts suddenly, and without ulceration, as I have often seen. The rupture takes place during the first twenty-four hours of the disease, when the conjunctiva is but slightly

reddish. It would be difficult to explain the causes of this sudden and spontaneous rupture. I shall confine myself to a detail of the phenomena which attended it in Egypt, and the consequences resulting from them. The aperture which remained in such cases was of a roundish form, and of a diameter nearly equal in every instance; it permits a portion of the aqueous membrane or iris to pass, and forms a hernia, known by the name of *staphyloma*; the projection formed by the aqueous membrane, is of a dark grey; that of the iris is of a deeper colour: this tumour is sensible to the contact of the smallest external bodies, and even to the friction of the eye-lids.

...The sight is more or less obscured, and the pupil partly or totally obliterated; but in general, the staphyloma gradually diminishes, returns to the anterior chamber, and the membranes resume their situation. Sometimes a portion remains without, which becomes strangulated by the contraction of the aperture, loses its sensibility, and acquires a certain consistency; or it swells, divides into many lobules, and assumes a cancerous character, especially if there be venereal taint.

...When the staphyloma recedes of itself, the aperture in the transparent cornea closes, by the sinking of its edges, and a small opaque, deep cicatrix remains, which at first intercepts the passage of the rays of light.

In some cases the crystalline and vitreous humours are also displaced, their membranes are impaired and suppurate, and the eye is disorganized. This is observable in many of the inhabitants, especially in indigent persons, who sleep almost naked on the earth, live on coarse food, and are exposed during the day to the dust and rays of the sun, without an attempt to avoid them.

...The hypopyon rarely followed this ophthalmia, and presented no peculiarities when it did occur. It may be known by the appearance of an opaque point in the transparent cornea, which obstructs the passage of light through the pupil. This point gradually increases, forms a projection on the surface of the eye, and occupies a larger or smaller space in the cornea, while it separates its strata. A slight fluctuation may be felt with the point of a stilet, which distinguishes

hypopyon from pterygium or albugo.

Larrey distinguishes the severity of ophthalmia depending on the course of the disease. If it causes scarring, it is possible to manifest cohesion between the lids, predisposition to cataract, fistula gutta serena, and is frequently followed by nyctalopia (?). If the secretions are serous the outcome is fine. If it is inflammatory ophthalmia, seldom terminates well, without the assistance of art (medical).

Causes

Larrey notes that the "...principal causes of ophthalmia are the violent heat of the days, the reflection of the rays of the sun from the white substances spread over the soil of Egypt, irritating the sensible parts of the eye, the immoderate use of spirituous liquors, and venery; the dust, which settles under the eyelids, and causes irritation; and especially the suppression of cutaneous perspiration, occasioned by the sudden transition of the atmosphere from cold to heat; add to this, the coolness and humidity of the nights, acting on the soldiers who are *bivouac*.

He insists that the prevalence of the disease is relevant to the Nile overflowing than at any other season.

And he continues with the relation of 'ophthalmia' with syphilis and gonorrhoea and the symptoms and course of these conditions.

He suggests as the best treatment for these the establishment of 'blennorrhagia' for the 'inflammatory ophthalmia' the bloodletting in the veins of the neck, the arm or the foot. We must note that Larrey suggests a specific treatment for each condition depending on the causative factor. He used the application of remedies such as collyriums and ointments and also the surgical cleaning of the scars. As for the remedies are based to the ancient medical prescriptions with some differential approaches:

...pediluvium should be added, and the steam of a decoction of emollient and anodyne substances should be directed on the eye affected: it should be washed with a strong decoction of flaxseed, poppy, and oriental saffron: care should be taken

to apply them as much as possible, between the eyelids: externally applied, they increase the oedema; cataplasms are inconvenient for this reason, besides their compression and weight on the eye. A paste made of the white of eggs, beaten with a few drops of rose water, some grains of sulphate of alumen and camphor, applied to the eye, at night mitigated pain and diminished inflammation.

...If there be symptoms of *saburra* in the prima via, some purgative medicine, or a few grains of ant, tartrate of potash may be added to their drink. During the night, some glasses of anodyne emulsion should be administered to the patient, is also necessary to increase perspiration, and to exclude the light.

...As the inflammation diminishes, and the swelling abates, the collyria should be strengthened by the mixture of acetate of lead or with a weak solution of oxygenated muriate of mercury or sulphate of copper...

About the surgical procedures:

...If the swelling of the conjunctiva continue, and it be enlarged, small incisions should be made with a lancet; the most projecting points may even be cut off; and the use of discutient collyria continued. Should the eyelids be inverted, and form a tumified circle about the eyes, which happens in many cases, punctures should be made in the direction of the eyelids, great care being taken not to wound the cartilages; astringent collyria may also be applied, for a few hours, and we then proceed to the reduction of the eyelids, first anointing them with cerate, and taking great care not to wound the globe of the eye: they are then retained in their proper position by a bandage, and the most perfect rest is enjoined on the patient. This mode of proceeding, which has always succeeded in my hands, requires some practice.

...when these means are insufficient, the redundant portion of the conjunctiva must be extirpated, sparing, as much as possible, of the tarsal cartilages; the eyelid relaxes and soon resumes its natural form.

Complementary treatment in surgical intervention

Ulcers of the eyelids should be treated with desiccative

and slightly *escarotick* substance. In this case, we used the following composition with success:

R. Cerate, made of virgin wax and oil of sweet almonds, (I scruple)

Red oxide of mercury, purified and levigated, (4 gr.)

Tutty (*ppt.*) (gr. 16)

Camphor, to be united to the yolk of an egg, (gr. 4)

Paste of cochineal (gr. 8)

Oriental saffron, powdered, (gr. 8)

Mix and triturate, them in marble mortar.

His Patients

Larrey makes an estimation and believes that very few people escaped the disease (ophthalmia) in 1797 - 98 and during 1800 few soldiers were affected with the disease and less severe than before.

After this period the disease showed a recession due to precautions and the accommodation to the climate of the soldiers.

After the battle of the 21st of March, 1801, the heat, the fatigue, the dampness and the coolness of the nights, affected again the soldiers and started to have again diseased eyes. A greater number of the soldiers were affected with ophthalmia and in two months three thousand men were taken into the hospitals.

The Greek girl Maria, an example of inflammatory ophthalmia

The case concerns "...a sixteen years old girl, Maria, the daughter of a Greek inhabitant of Cairo, affected at the age of two years with an ophthalmia, by which the right eye remained closed for a long time. The eyes opened gradually; the superiour eyelid had adhered to the transparent cornea, by a membranous substance which had formed there..."

"...This membrane, situated perpendicularly before the eye, was of a triangular form, arising from the internal surface of the eye-lid, and had contracted a strong adhesion

to three fourths of the upper part of the cornea, so that vision was totally destroyed on that side. The membranous production followed the motions of the eye-lid and eye. The disease must disfigure the patient... "Having placed her in a proper position, I passed a grooved probe between this membrane and the globe of the eye, containing a very fine bistoury, the edge of which was covered by the groove. When I had disengaged the grooved probe, I fixed the eye-lid and the eye, and cut the membranous fold from its adherence to the cornea; I then detached it from the eye-lid with this instrument, and a pair of dissecting forceps: the small portions which remained on the cornea were carefully removed, and the eye dressed with light dressing, dipped in vegetable mineral water. There remained on the cornea a pterygium of a dull whitish colour, supplied with red vessels, which gradually and insensibly disappeared to a so great degree, that this lady, at the period of my departure from Cairo, began with the eye to distinguish objects almost as well as the other..."

...In another case Larrey describes a 'violent ophthalmia' of an indigenous man caused by the worm of the family '*vena medinensis*' (gorgius) which was into conjunctiva of the patient and when this was removed the symptoms immediately abated, and the patient recovered. Another detailed description of 'Ophthalmia' we found in the pages 383-384 of volume I of this work. '*...This disease in many cases left a species of membranous thick, dense unguis, in the greater angle of the eye, behind the caruncula lacrymalis. This unguis, which might be compared to the membrana nictitans of aquatic birds, grows rapidly until it acquires the size of a lentil, and then remains stationary, or increases imperceptibly. It thus injures vision and prevents the motion of the eye, and the closing of the eye-lids, and keeps up a perpetual irritation. Sometimes the membranous ring extends, and gradually covers the transparent cornea and the pupil, so as to intercept the rays of light...*' And he continues: '*...I saw a great number of these membranous tubercles among the Arabian horses that are very obnoxious to them. They occupied one half of the surface of the eye: two of my horses were so affected.*

I requested M. Loir, the veterinary surgeon of the army, to extirpate them, which he did with ease. I had performed this operation on many soldiers.

Trachoma among the severe 'Ophthalmias'

One of the great causes of epidemics from the ancient times until Napoleonic wars was trachoma.

Trachoma was a constant problem for armies on the move. When troops returned to Britain from the Napoleonic wars (1798-1800) they brought trachoma with them, one of several diseases included in the clinical category 'Egyptian ophthalmia' (it could also be gonorrhoeal and/or Koch-Weeks conjunctivitis). As trachoma and related diseases spread through the general population, eye hospitals were opened, textbooks were written and ophthalmology became more specialized and increasingly professionalized.

Conclusions

Egyptian ophthalmia was an endemic in Middle East disease and the French soldiers got it from the inhabitants of these areas, especially from Egypt. D. J. Larrey, a famous and competent physician, was faced with an epidemic which did not know and expect, and tried to stop the dissemination of the disease which affected the combat capability of the army.

This epidemic was of the few cases that an ophthalmic condition can cause such a serious disability to a large part of population, as was the French army as well its enemies.

Dominique Jean Larrey (1766-1842) a great and inspired physician and the much loved and respected Chief Surgeon by the Emperor Napoleon Bonaparte, helped many wounded and ill soldiers during the long and bloody campaigns of the France leader. He established and organized the transportation and the removal of the wounded soldiers during the battle from the battlefield and he is considered one from the fathers of the Military Surgery.