A CASE OF KERATOMALACIA CURED BY PENICILLIN AND VITAMIN A

BY

KAMEL RIZK

EL-MINIA, UPPER EGYPT

AS far as I know, the use of penicillin in the successful treatment of keratomalacia has not been recorded. For this reason I think that the detailed description of a case of keratomalacia treated very successfully with penicillin and vitamin A therapy is worth publishing.

Case Report

On June 14, 1947, a male rural infant aged two years, was brought to my clinic with the following history:—towards the end of a short fever, of unknown cause, and of a duration of one week, both eyes started to become opaque, and the opacity increased rapidly. He was brought to my clinic three days after the onset of the opacity. On examination, he was found to be markedly emaciated and severely rickety, but he was not apathetic, the temperature was normal, and, apart from his eyes, there was no abnormality. Both eyes were kept open and blinked at long intervals. The conjunctiva of both eyes was dry with small whitish glistening spots on both sides of each cornea (xerotic spots). It was white without any signs of inflammation, and there was no discharge or lacrymation. Both corneæ were markedly ectatic, dry, lustreless and ulcerated without any inflammatory reaction, either in the form of dilatation of the limbal vessels, or the growth of new vessels towards the ulcerated area. The right cornea was very opaque and infiltrated except for a narrow clear rim about 1 mm. in breadth at the periphery. The whole cornea was markedly ectatic, the centre of the cornea projecting forwards for a distance of about 4 mm. beyond its original site, so that the whole cornea became shaped like a cone with a flattened top. There was a transverse elliptical ulcer at the summit of the ectasia involving about one sixth of the whole corneal surface. The cornea at the site of the ulcer was not very thin except at one small spot. By applying a wisp of cotton wool to the cornea, most of its surface was found to be insensitive. The ulcerative process, *per se*, could not account for such a degree of ectasia of the whole cornea, and there must have been much softening and loss of elasticity of the whole corneal tissue to account for such a degree of ectasia occurring with normal intra-ocular pressure. Owing to the ectasia, the anterior chamber was deep, but there was no hypopyon.

* Received for publication, November 11, 1947.

The iris was dimly seen through the narrow clear periphery. The condition of the left cornea was generally similar to that of the right cornea, so that the above description applies to the left as well except that the clear rim at the periphery of the cornea was about 1.5 mm. in breadth, the ectasia was about 3 mm. and the ulcer was about one seventh of the whole corneal surface.

The absence of any inflammatory reaction, the softening of the corneal tissues as indicated by the severe keratectasia, the xerotic condition of the conjunctiva and cornea, and the bilateral occurrence of the affection as well as the general condition of the patient, all these signs made the diagnosis of the case as keratomalacia quite evident. Parsons (1934) said "A characteristic feature of keratomalacia is the absence of inflammatory reaction" and the absence of inflammatory reaction in this case leaves no doubt as to the correct diagnosis.

Keratomalacia is rare in Egypt. Its cause is primarily vitamin A deficiency, but complication by a microbial agent is sure to occur. Treatment should be directed against the microbial agent, for which penicillin must be tried, as well as against the vitamin A deficiency for which prepalin (Glaxo) injections are valuable. Penicillin therapy was started in the form of drops of a concentration of 2500 units per c.c. of distilled water. The mode of administration was that used by Sorsby (1946) in the treatment of ophthalmia neonatorum with slight modification. Two drops of penicillin solution were put in each eye every minute for half-an-hour, then every five minutes for another half-an-hour, then every half-an-hour. Apart from these penicillin drops and atropine ointment which was applied twice daily, no other local treatment was applied. No wash, no hot compresses and no protection by bandage were done. General treatment was not started. At 6 p.m., *i.e.*, seven hours after starting penicillin therapy, the periphery of each cornea became less opaque and the clear rim increased, slightly but definitely, in breadth. I was so impressed by the rapid improvement produced by penicillin that I was tempted not to start vitamin A therapy so as to be able to observe the sole action of penicillin. And I yielded to the temptation, fortunately without ill effect. In addition to penicillin drops which were used during the daytime and when the mother happened to be awake by night, one injection of 20,000 units of penicillin in oil and beeswax was given at 8 p.m.

Next morning the condition of each cornea was better, the opaque area growing less and the clear area increasing. Treatment consisted in half hourly drops of penicillin and 20,000 units in oil and beeswax at 8 p.m. Atropine ointment was twice applied. The same treatment was applied for the next two days.

On June 18, the area of the opaque tissue in each cornea was much

less than when first seen, but the growth of the epithelium over the ulcerated area was very slow, and no change was observed in the degree of ectasia. I decided to apply both local and general vitamin A therapy. Local vitamin therapy was applied in the form of a 20 per cent. haliver oil ointment with a eucerine base frequently, daily. General vitamin A therapy was applied in the form of intramuscular injections of 0.5 c.c. of prepalin (Glaxo) twice weekly (100,000 units per c.c.). After 24 hours of starting vitamin A therapy the epithelium covered all the surface. Penicillin therapy was stopped two days afterwards, and only vitamin A therapy, local and general, as well as atropine ointment twice daily, were continued.

On June 25, local dionine ointment 2 per cent. was applied once daily in addition to the above treatment. This 2 per cent. ointment was rapidly replaced by 5 per cent. and then 10 per cent. ointment once daily, and atropine was stopped.

In five weeks, *i.e.*, on July 19, there was a dense central leucoma in each eye, just covering the pupillary area, the rest of the cornea being clear, except for a few vessels growing towards the leucoma. All ectasia disappeared and the cornea resumed its original shape. Xerosis was cured. Optical iridectomy was not contemplated owing to the poor general condition of the patient, and it was thought best to consider it at a later date.

Comment

This case is a severe one. Its severity is indicated by the above description as well as by the short history, probably correct, of three days. The prognosis in such cases is very bad. Basil Graves (1936) says that usually ulceration of keratomalacia is a bilateral rapid process, appearing in the centre of the cornea, leading to necrosis and rapid sloughing. He also says that the eye is not injected in this disease save when other complications occur (secondary infection). Penicillin, however, has revolutionized the prognosis in this case and acted dramatically. The response to penicillin in this case, when all inflammatory reaction was absent, indicated that some micro-organism which was penicillin sensitive, was present at a stage when the eye was not injected. This observation is contrary to the statement of Basil Graves mentioned above. However, the delayed growth of epithelium and the persistence of keratectasia, both responding to vitamin A therapy, point to the true aetiological factor in this disease, which is vitamin A deficiency.

It seems that penicillin should be given a trial in every case of keratomalacia, though its mode of administration need not be that described above. Certainly the method of subconjunctival injections, as described by Sorsby and Ungar (1947), is the best mode of penicillin administration in corneal affections. In keratomalacia,

subconjunctival injections of penicillin should be combined from the start with local and general vitamin A therapy, atropine ointment to the eye, as well as with any appropriate general treatment.

Summary

A detailed description of a case of keratomalacia in an infant is given. Details of the treatment used and the progress made are mentioned.

A comment is made as to the proper treatment of keratomalacia with penicillin and vitamin A, with reference to the aetiological factors in this disease.

REFERENCES

- GRAVES, BASIL (1936).—*The Eye and its Diseases*. Edited by Berens, p. 521.
 PARSONS, J. H. (1934).—*Diseases of the Eye*. Seventh edition, p. 220.
 SORSBY, A. (1946).—*The Practitioner*, Vol. CLVII, p. 67.
 SORSBY, A. and UNGAR, J. (1947).—*Brit. Jl. Ophthal.*, Vol. XXXI, p. 517.

ON GENESIS AND OPERATION OF THE CICATRICIAL (TRACHOMATOUS) ENTROPION OF THE UPPER LID

BY

Prof. A. KETTESY

DEBRECEEN

MOST operations for trachomatous entropion assume that the cause is the progressively incurved tarsus. Accordingly the solution has been sought in the straightening out of the tarsus, hence the operations of Celsus, Hotz, Nicati, Streatfeild, Snellen, Blaskovics, and their many modifications, generally with unsatisfactory results. Kuhnt's tarsectomy is an exception.

Observing closely the slow changes of the trachomatous entropion, it is not difficult to state, the turning of the tarsus appears late in the trachomatous process, preceded by a long and often stationary period, during which the intermarginal surface gradually merges with the conjunctival surface of the tarsus.

The entropion begins with the cicatricial shrinking of the tarsal conjunctiva, contracting into the well-known linear scar of the sulcus subtarsalis. The shrinking displays a traction in one direction upon the fornix, drawing it downwards, in the other direction upon the inner edge of the intermarginal surface. Thus arises the first stage of the cicatricial entropion: the rounding off of the posterior edge of the intermarginal surface. The line of the openings of the Meibomian ducts is directed against the eye.