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OBSERVATIONS ON WHEN TO APPLY HEAT AND COLD IN EYE TREATMENT.

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BY WM. H. POOLE, M.D.

DETROIT, MICH.

It is an undisputed fact that what are generally considered the simple things in the treatment of diseased conditions, whether medical or surgical, may if overlooked or misapplied, become serious, and sometimes be the means of bringing about untoward results. With this idea in mind, I have jotted down a few suggestions on when to apply heat and cold in eye treatment; not that these thoughts are entirely original, but in the hope that they may serve to remind us of a simple though useful adjunct, to our other treatment of the conditions mentioned as they may appear before us from time to time.

When we consider the general arrangement of the different tissues of the eye and its coverings, we are not astonished at observing the marked impression made upon the temperature of the different parts of the eye by the application of heat or cold, and we quite readily realize that the effect produced bears a direct ratio to the length of time of the application. In addition, however, to the influence which these agents exert on the temperature of the several parts of the eye, they exercise a controlling influence upon the circulation, which is fully as important and necessary to be borne in mind. While it is an old rule, that the temperature of the application which is most agreeable to the patient indicates which should be used, yet this can not be relied on absolutely, as instanced in many cases of external inflammations, where in the early stage hot applications afford relief, yet if persisted in too long edematous effusion ensues and possibly ulceration of the cornea with a lengthening out of the attack.

Either the dry or moist form of application may be made use of, but it is conclusively shown that better results obtain from moist applications, either hot or cold, not the least advantage possessed by moisture over the dry application, being the fact that it aids in keeping the conjunctival sac free of the unhealthy secretions. Moist applications possess more intensity of action, as is shown by the fact that the temperature is reduced much more rapidly by moist than dry cold; while on the other hand moist heat penetrates deeper and is more varied in the degree of heat obtained.

Both heat and cold exert a favorable germicidal influence. Cold, of no greater degree than can be well borne by the eye, prevents the growth and development of germs, and we well know that heat destroys many bacteria, a hot corrosive sublimate solution being over five times as effectual as a cold one. Of the external applications water is most frequently used, the effect being modified remarkably by the different degrees of temperature and the manner in which it is applied. For toilet purposes, in the majority of cases, more comfort will be derived from warm applications to the eyes, and the addition of a small quantity of boric acid to the water will be greatly

appreciated. Immersing the face in cold water and opening the eyes, as practiced by some, is to be deprecated, as the human eye is not suited to such treatment.

We will now consider more particularly the therapeutic application of these remedial agents, in some of the diseased conditions we see in our daily treatment of the eye. First, we may state as a general proposition that cold causes constriction of the capillaries, thereby checking the amount of secretion and exudation, and in this way acts as a sedative, relieving the pain in the beginning of acute inflammatory conditions.

On the other hand, hot applications are more useful in the later stages, bringing about a more healthy condition of the tissues involved, and relieving pain by stimulating absorption of the exudate and dilating the capillaries, not only in this way modifying the engorgement, but conveying to the part the life-giving principle for its proper nourishment. Again, we find that the quantity of a drug absorbed and the rapidity with which absorption takes place is greatly increased by the previous application of moist heat. This fact is frequently made use of when using mydriatics. In some cases of iritis, where owing to synechia the drug seems to make very little impression on the pupil, if we bathe the eye for eight or ten minutes with water as hot as the patient can bear, we will find absorption take place rapidly and we will get the desired action of the drug.

While moist applications are preferable, there are some cases where dry heat is more applicable and satisfactory, such as scleritis and iritis, where there is apt to be little or no secretion except of tears by reflex irritation.

We will find cold applications more suitable in the following conditions, viz.:

In conjunctival hyperemia, which consists almost exclusively in congestion of the vessels, with slight papillary engorgement, a very moderate increase in the secretion and with no swelling of the membrane, whether it is of traumatic origin or caused by eye-strain, the application of the cold douche or bathing with cold water for a few minutes, will be very effectual in bringing about a healthy condition of the membrane, care being exercised in not using water too cold or the reaction may be too severe.

In acute purulent conjunctivitis, which, as its name indicates, is characterized by a distinctly purulent discharge, thus differing from catarrhal conjunctivitis, for as Dr. Wecker says, "let a catarrh be never so intense it will not give rise to true blennorrhoea or purulence." We need vigorous treatment from the beginning and as an adjunct to other treatment, to assuage the initial swelling and pain we use ice cold applications, either by using bits of muslin dipped in iced water, changing them every minute so that the cold may exercise its beneficial influence; or in some cases, if the eye will bear it, small pieces of ice wrapped in muslin may be held on the eye. We need have no dread of untoward results from prolonged use as the rule, especially in the early stages of this form of disease, is continuous cold to the degree of toleration. These applications are to be continued day and night, ever being watchful of the cornea to see that it is not becoming involved, in which case the cold applications must cease and be succeeded by hot applications persistently, at least four times an hour for three or four hours, by which time usually the threatened destruction of the cornea will have been stopped, owing to the improved circulation and nutrition.

In ophthalmia neonatorum, cold applied in the same manner will be found just as useful and grateful to the little patient.

Cold applications are also sometimes useful in cases of phlyctenular conjunctivitis when, owing to the distressing photophobia, we can not get the patient to open the eyelids for the necessary remedies to be used, we drop a few drops of ice water on the eye, which penetrate between the lids and aid us in gently opening them.

Sometimes in penetrating traumatism of the eye where injury has been done to the iris and the lens, causing plastic iritis and traumatic cataract; ice cold applications are useful for their germicidal action as well as for overcoming inflammatory reaction.

We will now mention a few conditions where hot applications are more suitable than cold:

First, in acute catarrhal conjunctivitis, which while it may present somewhat the same symptoms we found in hyperemia, yet we have here a characteristic stringy, tenacious, flocculent, mucous discharge, with possibly some small masses of pus in it, having a tendency to stick the lashes together. At the very beginning of this condition we frequently find lukewarm applications very comforting and useful, but the error must be avoided of keeping up the treatment too steadily, as is sometimes done by the laity, who frequently make use also of such appliances as potato scrapings, bread and milk poultices, raw oysters, tea leaves, rotten apples and other disgusting substances, causing edema of the lids and conjunctivæ, intensifying the hyperemia, and finally, in some cases, producing ulceration of the cornea. Such conditions are not rarely met with in the clinics of public institutions.

In edematous conjunctivitis, a condition in which the hyperemia is not marked, where there is little pain and not much discharge, but a considerable effusion of serum beneath the conjunctivæ of both the eye and lids, causing a very uncomfortable swelling, bathing with lukewarm water will prove beneficial.

In trachoma, at the beginning of the disease, hot water is not usually well borne. As soon, however, as vascularity of the cornea arises with threatened ulceration, hot applications are indicated to stay the progress of destruction and assist in its repair. Hot compresses are oft times useful in causing the disappearance of the pannus by the inflammatory reaction which they promote.

In the less severe cases of phlyctenular conjunctivitis, lukewarm water will be very comforting and beneficial, helping to overcome the eruptive exudate.

In all forms of keratitis, hot applications are to be used, never cold, except possibly in phlyctenular, when ice cold water may be made use of for the immediate purpose of overcoming the photophobia, as referred to when speaking of phlyctenular conjunctivitis. This is practically the only time we use cold applications in corneal diseases.

The applicability of heat in diseases of the cornea will be well understood if we remember the anatomic structure of this membrane, it being non-vascular and dependent upon the surrounding tissues for nutriment, it follows that inflammatory or diseased conditions necessarily stop the supply of nourishment and death and destruction of the cornea results, as is evidenced by the ulceration. In order, therefore, to hasten the repair of the tissue it is necessary to overcome this stasis, which is accomplished by applying hot water, or sometimes better by dry heat, by folding

a napkin and heating it by the fire or with a hot iron.

Phlyctenular keratitis is undoubtedly the form which furnishes the majority of cases of corneal disease, occurring as it does among children who are delicate, ill fed, overfed or scrofulous, and in this class of cases we also see the disastrous results of ignorant interference in treatment by poulticing with the several harmful and repugnant articles mentioned previously, instead of using the simpler and more beneficial hot water compress.

On account of its stimulating properties, the hot compress will be found especially useful in the treatment of ulcers that do not heal readily, hastening the process of repair, while a drop or two of scalding water applied to a fungoid ulcer gives good results.

In suppurative choroiditis we find that hot applications are not only appreciated by the patient but are very beneficial, especially in mild cases.

Hot applications are often very grateful in muscular asthenopia, allaying the pain, and by stimulating the weaker muscle, removing the troublesome symptoms.

In a general way we may say the rule in all the milder cases, is intermittent use of the local applications of both heat and cold, from ten to thirty minutes at a time, and from three to ten times in the twenty-four hours, the continuous use of the applications being indicated only in the severer forms or in special cases.

270 Woodward Ave.

A CASE OF TACHYCARDIA.

Reported at meeting of the Toledo Medical Club.

BY J. L. TRACY, M.D.

TOLEDO, OHIO.

Mrs. —, aged 40, has many times during the last ten years told me about attacks of palpitation which she has had and which have come on suddenly, lasted from a few seconds to ten minutes and then as suddenly stopped. Many times I have been sent for when she had been having the attacks, but the heart would have quieted before I reached her. After an attack had passed off she would be weak and exhausted for a few hours, and then be in her usual health, which in appearance was a little below normal. I could never discover any organic trouble of the heart, nor of any other organ.

Occasionally she would have attacks of urticaria, and 0.13 gram of quinia would produce intense redness all over her body. As often as every three months she had attacks of bronchial irritation, coughing almost incessantly for an hour at a time, and raising great quantities of thick stringy mucus, these attacks lasting for about a week. The bowels are usually very loose, often moving four times a day for weeks at a time. The urine is usually scanty and high colored and causes much irritation.

I was called to see her and found her sitting in a chair, pale, breathing hard and absolutely pulseless. Every few minutes she had attacks of blindness. She said she felt as if falling or floating through the air. The heart was beating much faster than I could count and, if such a thing is possible, I believe it was beating three hundred times a minute. There was this peculiar thing about the heart sounds, that while it was beating so rapidly both the first and second sound could be distinctly heard; not that both would be heard in any one beat, but by taking the attention from the first sound the second could be heard. The heart had been beating that way for two hours.

I gave her morphia and atropia. The woman was not excited, but was in great distress. Extremities were pulseless and cold. Her feet were put into hot mustard water and I watched the effect of the hypodermics. Before I could tell what effect the morphia was having I decided to give her strychnia, and in about ten minutes it seemed that the heart was beating a little slower, and I gave her 0.0003 gram of nitroglycerin. Soon afterward she began to feel better and in two hours, as near as I could count, the heart was beating two hundred to the minute. About four hours afterward the heart began to intermit; the pupils became widely dilated; respiration was hurried; cold sweat all over the body; she could not see at all; complained of a sensation of sinking and I thought she was dying.

I gave her, in rapid succession, nitroglycerin and strychnia and she soon rallied and the pulse became regular and slow enough so that one could give a reasonable guess as to how fast it was beating, not less than two hundred. She was kept upon full doses of strychnia. About 6 P.M. she began vomiting and continued to vomit, at short intervals, until next morning.

The pulse remained at two hundred until 8 P.M., having been at the rate of two hundred and upward for twelve hours; after that time it became slower and the following day when the patient was quiet in bed, was 84.

There is a history of some special trouble when a child, of intense frequent headache for many years afterward, until she was fitted with lenses, since which time her headaches have recurred at long intervals only.

Riding upon steam cars had always caused dizziness. Turning over in bed often causes the same sensation; looking at moving objects, like the crowds upon the street, will do the same thing. Going up stairs has, for years, brought on palpitation. In summer walking out of doors makes her feel better, but in cold weather the palpitation with a feeling of suffocation comes on as soon as she goes into the cold air.

Her father, who is about 75 years old, has attacks of palpitation and a sister died of heart trouble at the age of 30.

This case suggests many conditions as the probable cause of the trouble. I have thought of eye strain, disease of the internal ear, aneurysm or pressure of something else upon the sympathetic, by which the nerve has been irritated or else by which inhibition has been cut off. I have looked for digestive disturbances that could possibly cause the trouble reflexly. Dr. Collamore called my attention to a mitral regurgitation which I think is not always noticeable. The heart is hypertrophied.

The attack referred to above occurred five weeks ago, since that time she has taken, as seemed required, strychnia, digitalis or strophanthus, principally the latter, and effervescent carbonate of lithia. For two weeks she remained in bed, then began sitting in a chair, and against advice, went down stairs. Tuesday, two days after, she did not feel so well. Wednesday her heart was beating two hundred per minute. In the evening she became nauseated and vomited all night. The entire body, as well as the bed, could be seen to vibrate with the action of the heart. I could not tell whether the rapid action of the heart caused the vomiting or the nausea induced the rapid action of the heart, or whether there was any connection