

AN
INAUGURAL DISSERTATION

ON

Inflammation.

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BY

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OF

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To Paul F. Em, M. D.

Prof. of Surgery in the University of Nashville, etc.

The Merit of whose Scientific and Professional Reputation
is only equaled by

the Ability and Worth of his Colleagues,

Who with Him have made this College

Justly the Great Medical Light of the South,

this humble Dissertation

is affectionately inscribed, by

George W. Key.

Inflammation.

The definition of inflammation varies according to the opinions of different authors. That of Miller seems to be the most acceptable of any that has been given. With him Inflammation is defined to be "a perverted condition of the blood, and blood vessels of a part, intercepting its healthy function, and changing its normal structure." And it is ordinarily accompanied with redness, pain, heat and swelling. In the progress of inflammation, the first phenomenon which is observed is that of increased vascular excitement in the parts involved. On the first applica-

tion of an irritant to a part of the economy, it excites an influence, first, directly on the sentient extremities of the nerves of the part, producing a centre of irritation, and thereby a preternatural flow of blood to the part.

The capillary system of bloodvessels being endowed with the vital properties of Irritability and Contractility, when an irritant is applied to a part their normal action is increased above that which is compatible with a regular performance of that healthy function which is necessary to the well being of the economy.

And after an indefinite period of time, if the exciting cause continues; exerting its detrimental influence upon the implicated tissues, the vital endowment of the capillaries will be so far destroyed that

they will no longer offer any resistance to the blood's constantly exciting influence.

In consequence of this over-excited condition of the capillaries their excitability and contractility are exhausted, so that paralysis of the minute vessels is invariably the result, followed by congestion.

True inflammation comes on next in the order of phenomena; characterized by redness, pain, heat, and swelling. It is accompanied, also, by more or less constitutional disturbance.

Redness—The first symptom in this abnormal condition, which I shall notice is that of redness. This phenomenon of inflammation is produced by an increased flow of blood to the capillaries of the inflamed organ or tissue, together with a large amount of red corpuscles clustering together in the di-

lated capillaries.

Swelling- This is the result of an extravasation of serum, lymph and blood in the meshes of the surrounding cellular structure.

Its extent varies with the nature of the structure in which it is situated- generally greater in the cellular and mucous structures, than that of the serous and fibrous.

Pain- This is a symptom of considerable importance to both the patient and the physician. To the patient, first, on account of the amount of suffering which it inflicts.

Secondly, it serves as a valuable index to the dangers which may be awaiting him. For without this promonitory symptom, dangerous and perhaps fatal disorganization might ensue, without his being aware of what disaster was going

ow in his systems. But here as well as in all other departments of human interest, Providence has made ample provision for man, to secure his safety and happiness. To the physician, pain in an inflamed part is of interest because it directs his attention to the seat of disease, so as to enable him to come to a true diagnosis of the case.

The pain of an inflamed organ or tissue differs in character according to the kind of tissue in which it is situated. In Serous membranes the pain is of a sharp and lancinating character; in Fibrous tissues it partakes more or less of the same nature of that sustained by serous membranes. In the cellular tissues and mucous membranes, the pain is of an active kind. For instance, when the internal coat of the

bowels is inflamed the pain is burning,
or scalding; when that of the urethra-
as in gonorrhoea-the patient complains
of a burning or scalding sensation.

Hence, by understanding the nature
of the different issues of the human
system, the Medical man is the better
prepared to diagnose and treat the dif-
ferent diseases he may have entrusted
to his care and skill. And, indeed, with-
out this knowledge many of the most com-
mon distempers would sweep through hap-
less families unchecked, while the vic-
tims of its rage would be doomed to hope-
less mortal ruin.

The different events of inflammation
are eight in number. Viz; Effusion,
Suppuration, Granulation, Cicatriza-
tion, Ulceration, Adhesion, Resolution,

and Mortification.

Effusion.— This is the first result of inflammation, and is the product of a low state of vascular excitement. The effusion exudes through the pores of the capillaries with considerable facility, being chiefly composed from the watery portion of the blood. The swelling from effusion of serum is known from that caused by other products of inflammation by putting upon pressure.

Adhesion.— This characterizes a higher degree of inflammatory action than effusion. The Fibrin or Lymph of the blood being effused in the surrounding cellular tissue, it becomes organized, thereby filling up the cells of the parts. Hence arises the induration which accompanies almost all true inflammation.

Granulation. - This is a process, which nature, always eager to repair her injuries, has set up for the purpose of restoring the wounds she has sustained, from an undue amount of vascular excitement, causing a solution of continuity of the soft parts. This process will be healthy or unhealthy according as the system is normal or otherwise.

Cicatrization, an other result of inflammation, is the return of the tissues to their original healthy functions, by the complete restoration of their lost parts. When a wound is thus healed the cicatrix is more liable to take on disease than is the original skin. Therefore we see ulceration taking place, more or less frequently, owing to the feeble organization of the newly formed tissue.

Ulceration is supposed to be the disintegration, or molecular death of a part. It may also be defined to be a solution of continuity in the soft parts, produced by a mechanical injury, or it may supervene without any assignable cause. We most commonly see it in those individuals of debilitated constitutions, produced by grief, anxiety, or hereditary taint of system. The parts of the body most subject to this diseased process are those that have the least vitality. Such as the upper and lower extremities. The anterior part of the Tibia is the most liable of these to take on the disease. In them the circulation is slow and tardy, owing to their being at a greater distance from the centre of the circulation, and also to their dependent positions.

Suppuration.—Here we have the complete destruction of the inflamed parts in consequence of the high inflammatory action to which the parts are exposed. This process announces the termination of the inflammation.

Some Pathologists suppose that this suppuration is a secretory process of the capillaries. Now, I insist, that if this be correct it is an exception to the constant law which governs all other secretory organs, and secretions. For it is an established fact that appropriate organs have assigned to them the duty of secreting urine, and bile, and other secretions of the economy, known to the various types in physiology; and it is further known that in order to due amount and kind of these secretions,

the individual organs must be in a normal condition. Pus being the product of diseased action, it seems to me to be an unphilosophical conclusion to suppose that it is secreted from healthy blood. I would, with all due deference to others, ask is it not a more plausible theory of the formation of pus, to regard it as a decomposition of the tissues that are involved in the inflammatory action? Dr. Goss regards the cyst that forms the boundary between the pus and surrounding healthy tissues, to be the membrane that secretes the matter found in an abscess. But to him I reply, by asking, if when this abscess is formed the inflammation is not less than before? The cyst seems to be formed by the decomposition of the part exposed to the highest degree of inflammatory

action. The central parts, having lost their vitality, press on the surrounding cellular tissue, thereby condensing them into one solid mass by obliterating their cells.

The character of puss varies according to the nature of the diseased action, partaking, too, generally of the condition of the constitution. It is said to be ichorous, fetid, sancous, healthy, or laudable. The discharge is ichorous when a thin watery acid. Sancous when mixed with serum and blood. Laudable, or healthy, when of a straw color, and inodorous, having a sweetish taste, and of the consistence of cream.

The symptoms which characterized suppurations situated externally, are the sudden cessation of pain, a throbbing sensation, and fluctuation on percussion. When the suppurations is situated in some internal organ, we have in addition to the symptoms

just mentioned, others which are denominated constitutional. Such as rigors alternating with flushes of heat over different parts of the body. Prostration, sooner or later, sets in attended with a low form of fever denominated hectic. There is a tendency in this fever to decline towards morning, and exacerbation in the evening. Towards the close of the disease there is a tendency to profuse colligative sweats, hiccough and finally death from exhaustion of the vital powers of the system.

Inflammation according to its duration is divided into acute and chronic. It is said to be acute when it runs its course rapidly, and is of a short duration. And it is chronic when it does not terminate in the usual manner. And it may be remarked just here, that these are varieties of this dis-

ease which set out with the chronic form.

This is seen in the irritation accompanying tubercular deposition, and some forms of uncomplicated pneumonitis. Chronic inflammation may run its course in a few weeks, or it may protract its course to months, or even years.

Inflammation may terminate in three different ways; 1, in resolution; 2, in mortification; 3, in metastasis.

Resolution is the most favorable termination. It is the subsidence of the inflammatory action upon a part, without leaving any traces of its effects behind, except a slight induration. In other words, the return of the parts to their healthy condition.

Mortification.— This is defined by most writers to be the complete death of the tissues

implicated in the inflammatory process. This condition may, ^{be} known by the parts having a dark, livid appearance. Blisters or vesicles form under the cuticle, containing thin fetid serum. Accompanying these symptoms we have a tumultuous, quick pulse, which partakes more or less of the typhoid character; a dry and brown tongue, a hot skin, restlessness and anxiety; and sometimes there are mania, hiccups, subsultus and delirium. Nature, always true to herself, soon sets up a process for the reparation of her injuries, by forming a red line of demarcation between the sound and the dead parts. This process most Pathologists call ulcerative absorption. It will be more or less rapid and complete, in its progress and destruction, according to the normal or abnormal condition of the system.

Metastasis.— In this we have an unfavorable termination of the disease. This is often seen in the unpropitious results of the exanthematous diseases. When this supervenes, we look upon it as an unauspicious termination, because the disease has passed from the surface to vital organs within, — the enemy has broke through the outworks of defence and is making battle within the walls of the citadel.

Causes.— The causes of inflammation may be graduated into two leading classes; namely, exciting and predisposing.

The latter causes include the sanguine temperament, excitability, excess in food, drink, or undue exertion; miasma, impure food, corrupt air, tainted or unsound diet, inadequate clothing, &c. Others might be mentioned, but they are alike with these idiopathic and constitutional.

The former causes, according to this division, may be subdivided into direct, indirect, and specific. The first class is of a chemical or mechanical kind, such as those effects produced by salts, acids, &c. The second class is vital, such as cold and heat, turpentine and cantharides. And the third, the specific kind, are such as virus inoculated or vaccinated into the economy.

Treatment. The treatment for Inflammation may be divided into local and constitutional. The local.—The first indication in all inflammation is to remove if possible the exciting cause, whatever it may be. For instance, if the eye has become inflamed from the effect of light, light should be excluded from that affected organ. So of all undue, or unnatural stimulents when they are acting upon an organ, or tissue. Af-

ter the irritating cause has been removed, and there still remains in the part any vascular excitement, we may combat it with cold water. Cold applied long enough is an admirable remedy to reduce vascular excitement. It acts most beneficially, by diminishing the irritation which has been set up, lessening the quantity of heat, and by causing the capillary vessels to contract, so as to lessen the amount of blood in them. If this treatment should fail, which will seldom be the case, we then adopt other means; such as cups, leeches, punctures, &c. over the seat of disease.

In addition to the remedies already mentioned, we would expect considerable benefit from rest and position, solution of sugar of lead, and muriatic

of an^monia, in the early stages. In some high grades of inflammation, moisture and warmth are quite pleasant to some patients - by relaxing tension and diminishing pain. We sometimes, too, use nitrate of silver, and iodine with marked advantage. These exert great antiphlogistic powers.

Constitutional treatment. This is of a more extensive character, and embraces many of the remedies which we sometimes apply locally. This class of treatment varies according to the intensity of the inflammation, and the age and constitution of the patient. If the inflammation, or inflammatory action be of a sthenic character, the patient robust, the skin hot and dry, with a strong and bounding

pulse, we should bleed the patient, in an erect position, by making a large orifice in the vein, allowing the blood to flow until there is an approach to syncope.

Calomel is an excellent auxiliary to venesection, and should be followed by saline purgatives. Refrigerants diaphoretics should also be administered through the day so as to produce gentle diaphoresis. These remedies act advantageously by equalizing the circulation, and at the same time they diminish the excessive heat of the whole surface of the economy.

Diuretics, also, are valuable remedies in the treatment of inflammation. They are particularly indicated when the urine is scanty and

high colored. They deplete the system, act as revulsives, and carry off the effete matter from the blood.

In addition to these constitutional remedies, we may expect considerable advantage from Opium, tincture of cicuta, and antimonial preparations. All of which are admirable remedies for reducing the action of the heart and arteries. Should the patient be debilitated from the commencement of the disease, or be brought to this condition by the exhausting effects of the disease itself, we should endeavor to support him by administering appropriate stimulents. But such a state should be fully made out before we resort to such stimulation, lest we unnecessarily excite the vascular system; and when made out

we should not fail to resort to such supporting medication, for it is but too often that patients sink to the tombs from the neglect of these preservative means.

Without pushing these observations further, I only shall add, that with this proposed diagnosis, and treatment, I should expect to relieve my patient.

But whether it would kill or cure, I submit it as my Inaugural Dissertation, to the enlightened judgment of the honorable President and Faculty of the Medical College of the Nashville University.