FURTHER OBSERVATIONS
ON THE
DISEASES
WHICH AFFECT THE
SYNOVIAL MEMBRANES OF JOINTS.

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Read July 19, 1814.

I.

DURING the last session I had the honour of presenting to the Society an account of several cases, which appeared to throw light on the pathological history and classification of the diseases of the human joints. In the present paper, I propose to communicate some brief practical observations on the symptoms, by which those diseases, which affect the synovial membranes, are to be distinguished, and on the treatment, which should be adopted for their relief. On the latter subject indeed, what I have to offer may seem to have little or no claim to the merit of novelty. The effects of the various methods of treatment

now employed by physicians and surgeons are for the most part of accidental discovery. The improvement of scientific pathology seldom leads to the invention of new remedies ; but it enables us to understand better the application of those, which are already in use ; to know the particular cases to which particular remedies are suited, and to distinguish the curable diseases, from those, in which a cure cannot be effected.

II. *On the causes and symptoms of inflammation of the Synovial Membrane.*

Inflammation of the synovial membranes may occur as a symptom of a constitutional disease, where the system is affected by rheumatism, where mercury has been exhibited improperly, or in large quantities, or where there is general debility from any other cause. But in these cases, the inflammation is seldom severe ; it occasions an effusion of fluid into the joint, but rarely terminates in the extravasation of coagulable lymph, or thickening of the inflamed membrane. Sometimes it leaves one joint to attack another, or it suddenly subsides without another joint becoming affected.

At other times the inflammation occurs as a local affection produced by a sprain, the applica-

tion of cold, or arising from no evident cause. It is here for the most part more severe, and of longer duration: it leaves the joint with its functions more or less impaired, and occasionally terminates in its total destruction. In itself it is a serious disease, but it is often confounded, under the general name of white swelling, with other diseases still more serious. In some cases, it assumes the form of an acute, but in the greater number of instances, it has that of a chronic inflammation*.

In the former, there is pain and tenderness of the joint, and usually redness of the skin. The pain is severe; not referred to a particular spot, but to the whole joint. When the pain has existed for some time, swelling takes place. The period at which the swelling shews itself, varies from a few hours to two or three days, from the commencement of the attack. The patient usually keeps the limb a little bent, and every attempt to bend or extend it further aggravates the pain.

* It is to be observed, that the boundaries of acute and chronic inflammation in these, and in other cases, are not well defined. These terms accurately enough express the two extremes, but there are intermediate degrees of inflammation of which it is difficult to decide, whether they should be considered as being of the acute or chronic kind. Language can not supply names for all the varieties of morbid action which occur, but the surgeon will learn to distinguish them, and the corresponding varieties of treatment, and it is this nicer discrimination which forms a principal difference between the experienced and inexperienced practitioner.

With these symptoms, there is inflammatory fever. In a few days the disease either subsides altogether, or assumes the chronic form: more frequently it has this form from the beginning.

Where there is chronic inflammation of the synovial membrane, the pain and tenderness are less, so that the patient is able to walk about, and often without experiencing any severe distress. There is no unusual redness of the skin, and little or no fever. The swelling begins soon after the commencement of the attack, but it increases less rapidly than where the inflammation is acute. These symptoms vary in degree at different periods, and generally are aggravated by exposure to cold or any unusual exertion.

In the first instance, the swelling of the joint arises entirely from a preternatural quantity of synovia being collected in its cavity. In the superficial joints, the fluid may be distinctly felt to undulate, when pressure is made alternately by the two hands placed one on each side. When the inflammation has existed for some time, the fluid is less perceptible than before, in consequence of the synovial membrane having become thickened, or from the effusion of lymph on its inner or outer surface; and in many cases, when the disease has been of long standing, although the joint is much swollen, and symptoms of inflammation still exist, the fluid in its cavity is scarcely to be felt. As the swelling consists more of solid substance, so the

natural mobility of the joint is in a greater degree impaired.

The form of the swelling deserves notice. It is not that of the articulating ends of the bones, and therefore it differs from the natural form of the joint. The swelling arises principally from the distended state of the synovial membrane, and hence its figure depends in a great measure on the situation of the ligaments and tendons, which resist it in certain directions, and allow it to take place in others. Thus, when the knee is affected, the swelling is principally observable on the anterior and lower part of the thigh, under the extensor muscles, where there is only a yielding cellular structure between those muscles and the bone. It is also often considerable in the spaces between the ligament of the patella and the lateral ligaments, the fluid collected in the cavity causing the fatty substance of the joint to protrude in this situation, where the resistance of the external parts is less than elsewhere. In the elbow the swelling is principally observable on the posterior part of the arm, above the olecranon and under the extensor muscles of the fore-arm; and in the ankle it shews itself on each side, in the space between the lateral ligaments and the tendons, which are situated on the anterior part. In like manner in other joints, the figure of the swelling, whether it arises from fluid, alone, or joined with solid substance, depends in a great measure on the ligaments

and tendons in the neighbourhood, and on the degree of resistance which they afford, and these circumstances, though apparently trifling, deserve our attention, as they enable us more readily to form our diagnosis.

In the hip and shoulder the disease occurs less frequently than in the superficial joints. The effused fluid can not here be felt to undulate, but the swelling is perceptible through the muscles which cover it. When the hip is affected the pain is usually confined to the hip itself; sometimes it is referred to the knee, also, as in cases where the cartilages of the hip are ulcerated. The following circumstances enable us to distinguish the two diseases from each other. In the former the pain is more severe in the first instance than afterwards; and there is swelling of the nates. In the latter the pain is trifling at first; becomes gradually worse, till it is at last exceedingly severe, and the nates are wasted and flattened instead of being swollen.

After the inflammation of the synovial membrane has subsided, the fluid is absorbed, and in some instances the joint regains its natural figure and mobility; but in the majority of cases stiffness and swelling remain. In the superficial joints the swelling has sometimes the form of the articulating ends of the bones, (that is, the natural form of the joint,) and we may suppose it in this case to arise

from the thickened state of the synovial membrane. At other times it has the same peculiar form, which it possessed while the inflammation existed, and while fluid was contained in the joint, and we may suppose that it depends principally on the inner surface of the synovial membrane having a thick lining of coagulable lymph.

The chronic inflammation of the synovial membrane often continues for many months, and after having subsided is very liable to recur from slight causes. Thus a person has this disease in his knee; the inflammation is cured, but tumor and stiffness remain. Whenever he is exposed to cold, or exercises the limb in an unusual degree, and often without any evident reason, the pain returns and the swelling is augmented. Such cases are of frequent occurrence, and they form a large proportion of those which are known by the name of white swelling.

Long continued and neglected inflammation of the synovial membrane occasionally terminates in the formation of an abscess in the cavity of the joint, in ulceration of the cartilages, and in complete destruction of the articulating surfaces. In this last stage, if we wish to know whether the inflammation of the synovial membrane, or the ulceration of the cartilage, has been the primary disease, we must form our judgment, not from the present symptoms, but from the previous history

of the case. It is indeed often difficult to procure a history, on the accuracy of which we can rely, particularly in hospital practice; but this is of less importance, as whatever the disease may have been in its origin, where it has proceeded so far as has been described, there is no difference with respect to the treatment; and in general, no remedy can be employed with any prospect of advantage, except the removal of the limb by amputation.

III. *On the Treatment of the Inflammation of the Synovial Membrane.*

In the acute form of the disease, leeches may be applied to the part; and in most instances it will be right to take blood from the arm. Warm fomentations produce better effects than cold lotions. Attention should be paid to the state of the bowels, and Dover's powder, or some other diaphoretic medicine, may be exhibited. Under this treatment the acute inflammation in general speedily subsides.

The chronic inflammation is relieved more slowly. In the first instance, the joint should be kept in a state of perfect rest. Blood should be taken from the part by means of leeches or cupping, and this may be followed by the application of a blister,

large enough to include the greater part of the circumference of the joint. Under this treatment the pain is relieved, and in a few days the swelling, as far as it depends on the fluid collected in the cavity of the joint, is much diminished. Even where the tumor is solid, arising from the effusion of coagulable lymph, it will in a great degree subside, and sometimes be entirely dispersed, provided the lymph has not yet become organized. A single blister often produces marked good effects, but it is generally necessary to repeat both the blister and the blood-letting several times. The repeated application of blisters is more efficacious than a single blister kept open by the savine cerate or by other means for a considerable time. When the inflammation is in a great measure subdued, a moderate degree of exercise of the joint is rather beneficial than otherwise. Liniments, which irritate the skin, may be rubbed on twice or three times in the day. The following liniment is more stimulating than those in common use, and has appeared to me in most instances to have been productive of much better effects with respect to the disease.

Olei Olivæ ℥iss.

Acidi Sulphurici ℥fs. M. fiat linimentum.

It may be used of this strength for the class of persons who apply at an hospital for relief; but for persons of a higher class in society, in whom

the cuticle is thinner, and the cutis more easily irritated, the proportion of the olive oil should be greater. The effect of this liniment is to excite some degree of inflammation of the skin; the cuticle becomes of a brown colour, and separates in thick, broad scales, and the inflammation of the internal parts is relieved, probably on the same principle as by a blister. The friction used in applying the liniment appears to be of service after the inflammation is nearly subdued, but if friction be employed in the first instance the disease is aggravated.

No other remedies seem to be productive of much benefit.

Issues and setons, which are useful in cases of ulceration of the cartilage, are of no service whatever in this disease.

Plasters of gum ammoniac, and others of a similar nature, are of little efficacy, while inflammation still exists; but afterwards they are of use in guarding the joint from the influence of the external cold, and preventing a relapse.

The swelling and stiffness that remain after the inflammation has subsided, if moderate in degree, may be relieved by the free exercise of the limb, and by friction. The mercurial ointment with camphor may be rubbed on the joint; or friction

may be made by the hand with starch or other fine powder. The friction however should be employed with caution, as, when used too freely, it sometimes occasions a return of the inflammation. Whenever there is the slightest indication of this being the case, the friction should be omitted for a time, and leeches should be applied, and if the friction be resumed it should be employed in a less degree, and less frequently than before.

When the swelling and stiffness in consequence of the inflammation are very considerable, I have seldom known much, and I have never known entire relief produced by friction or by any other means. Here too the patient is more liable to a return of the inflammation, and hence friction must be employed with still greater caution than in other cases.

On the whole I have not found so much good produced by friction, as from what I had heard of its effects, I had been led to expect; and I have known it, when used too freely, or too early in the disease, to delay rather than to expedite the cure. Friction appears to be more efficacious where the stiffness of a joint depends on a contracted state of the muscles or tendons of the limb, and on these being glued to each other and to the surrounding parts, than where it is the consequence of disease in the joint itself.

I have in several instances tried the effect of pumping hot water on a stiff joint, as recommended by Le Dran, and as now practised at some watering-places. The blow of a column of water falling from a height of several feet produces considerable friction, with which are combined the relaxing powers of heat and moisture. This practice is certainly productive of benefit ; but the observations just made apply to this as well as to the other modes of producing friction.

IV. On the Symptoms produced in those Cases, in which the Synovial Membrane has undergone a morbid Change of Structure.

In my former communication respecting the diseases of the joints, I gave an account of several cases, in which the synovial membrane had undergone a peculiar morbid alteration of structure. The observations which I then made have been fully confirmed by many similar cases which have since come under my notice. This disease generally takes place in young persons under, or not much above, the age of puberty. I do not recollect more than one instance of it having occurred after the middle period of life. In general it can be traced to no evident cause ; but occasionally it takes place as a consequence of repeated attacks

of inflammation. In this respect it resembles other diseases of the same order. Inflammation of the lungs may produce tubercles, and inflammation of the breast may occasion the growth of a schirrous tumor. Where I have had an opportunity of examining the morbid appearances after amputation, I have always found the whole, or nearly the whole of the synovial membrane affected by the disease; but it is probable, that if the examinations were made at an earlier period, we should always find the morbid change originating in some one point. A patient was admitted into St. George's Hospital in whom this disease was beginning on the inside of the knee: from thence (in the course of three months) it gradually extended itself in every direction over the whole circumference of the joint. In a girl, who laboured under this affection of the knee, but who died in the hospital of another complaint, I found one half of the synovial membrane in a state of disease, and the other half retaining its natural structure and appearance.

In the origin of this disease there is a slight degree of stiffness and tumefaction, without pain, and producing only the most trifling inconvenience. These symptoms gradually increase; at last the joint scarcely admits of the smallest motion, the stiffness being greater than where it is the consequence of simple inflammation. The form of the swelling bears some resemblance to that in cases of inflammation of the synovial mem-

brane, but it is less regular. The swelling is soft and elastic, and gives to the hand a sensation as if it contained fluid. If only one hand be employed in making the examination, the deception may be complete, and the most experienced surgeon may be led to suppose that there is fluid in the joint, when there is none ; but if both hands be employed, one on each side, the absence of fluid is distinguished by the want of fluctuation.

The patient experiences little or no pain until abscesses begin to form, and the cartilages ulcerate ; and even then the pain is not so severe, as where the ulceration of the cartilages occurs as a primary disease, and the abscesses heal more readily, and discharge a smaller quantity of pus than in cases of this last description. At this period the patient becomes affected with hectic fever ; loses his flesh, and gradually sinks, unless the limb be removed by an operation.

The progress of this disease varies in different cases. In general one or two years elapse before it reaches its most advanced stage ; but sometimes the period is much longer ; and occasionally it becomes indolent, so that it remains during many months without any sensible alteration. In like manner tubercles of the lungs, or schirrus of the breast in some instances remain in an inactive state for several months, or even for some years,

The diagnosis of this disease is seldom difficult. The gradual progress of the enlargement and stiffness of the joint without pain; and the soft elastic swelling without fluctuation, in most instances enable us to distinguish it, not only from inflammation of the synovial membrane, but also from the other morbid affections to which the joints are liable.

V. *On the Treatment of Cases, in which the Synovial Membrane has undergone a Morbid Alteration of Structure.*

Where there is swelling and hardness following inflammation, the substance which has been effused may be absorbed, and the swelling and hardness may disappear, but I know of no instance in which an organ having completely lost its natural structure is capable of having that structure restored. Physicians and surgeons have been employed during successive ages in endeavouring to discover a cure for tubercles of the lungs, and cancer of the breast, and the result of their labours is only to prove that these diseases are incurable. Analogy therefore would not lead us to be sanguine as to the discovery of a remedy for this disease of the synovial membrane, and experience shews that it is equally incurable with other maladies of the same order. By means of rest and cold lotions the progress of the disease may

be somewhat checked, as the suppuration of tuberculated lungs may be retarded by occasional bleeding, and a milder climate; but ultimately the ulceration of the cartilages, the formation of abscesses in the cavity of the joint, and the consequent disturbance of the general health, render the amputation of the limb necessary in order to preserve the patient's life. At this period therefore the surgeon is called upon to recommend, and to urge an operation; but at an earlier period it is a matter of choice with the patient, whether he will live with the incumbrance of an useless limb, till the advanced stage of the disease renders its removal indispensable, or whether he will submit to the loss of it before the absolute necessity for losing it exists.