Gonorrheal arthritis : treatment by early irrigation of joint / by De Forest Willard.

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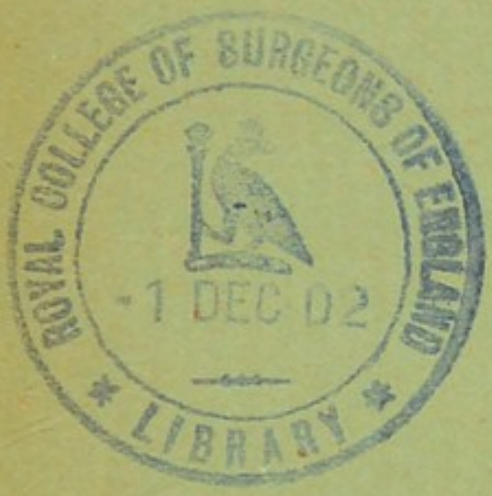

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REPRINTED FROM

THE THERAPEUTIC MONTHLY.

1902.

Reprinted from THE THERAPEUTIC MONTHLY, July, 1902.

GONORRHEAL ARTHRITIS; TREATMENT BY EARLY IRRIGATION OF JOINT.*

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Gonorrheal arthritis, occurring as it does in from three to five per cent. of the cases of specific urethritis and resulting, as it does, if badly treated, in so much disability of the functions of a joint, is certainly a disease demanding careful attention.

The sooner the term "gonorrheal rheumatism" is abandoned, the better it will be for patients and physicians. The term rheumatism, as it is used by a majority of the profession, is a disgrace to our brotherhood and in a large proportion of cases is simply a cloak for ignorance or carelessness. Especially is this true in the use of the term as applied to joint disease, since by its employment thousands of tubercular, septic and gonorrheal joints are lost beyond reclaim through the unwarranted carelessness of the medical attendant. Gonorrheal arthritis is a specific disease with a specific cause; articular rheumatism is a specific disease with its own specific poison. In diagnosis and in treatment they should be thoroughly differentiated, and the proper means instituted for their relief. True, we have gonorrheal arthritic cases of sudden and rapid development, and we may be deceived at first by the false statement of the patient in regard to a urethral or vaginal discharge, but careful personal investigation and the application of the instruments of precision, which should be in the hands of every educated physician, will speedily set aside all elements of doubt. That rheumatism can occur coincidently with an acute urethritis is, of course, possible, but the wiser plan in any arthritic trouble

*Read, by invitation, before the American Therapeutic Society, at New York, May 15, 1902.

arising in a case of existent or recent gonorrhea is to look upon the urethritis as the cause. Especially is this probable when there has been a sudden cessation of the urethral discharge and an equally sudden onset of joint symptoms. In the forms of arthritis that arise gradually, a greater element of doubt may exist, since the symptoms are masked. Again, gonorrheal arthritis may arise in a gouty individual, but if a careful visual and microscopical investigation is made, the diagnosis can be definitely settled. It is possible for an arthritis to develop even months after the gonorrheal attack, and a patient may thoughtlessly deny that he has or has had urethritis. The absolute untruthfulness of this class of patients must also always be taken into consideration.

We need at this day hardly stop to consider the question whether the gonococcus is the cause of the gonorrhea or whether it is the result of the infection, for we know that this micro-organism or its products, carried in the blood, will infect various tissues and enter joints that have from slight traumatism or pre-existent disease lost their resistive power. A foothold gained, the multiplication of the infecting bacilli is rapid. Too frequently the conflict ends in the success of the virulent invading enemy, in spite of the phagocytic resistance of the oxyphilic leukocytes. The effusion within the joint, at first serous, becomes rapidly laden with the multiplying gonococci, together with the debris of the overpowered leukocytes, and a mixed infection may occur and suppuration follow, or a fibrinous exudate may be thrown out, resulting in adhesion or fibrous ankylosis. As the conflict progresses, heat, swelling, redness and pain disappear, and deposit outside the joint adds to the permanent disability of the articulation. Such is the course when Nature is unaided or when resistive power is low. In polyarticular cases there is often high fever, intermittent chills and great prostration.

Since the discovery of the gonococcus by Neisser,

in 1879, we have far less right to be deceived in our diagnosis than in former days. This diplococcus is a positive entity and its presence is usually demonstrable in the fluid contained within the joint. After delay, the micro-organism may have died and only its products are left behind, but the surgeon should attack the joint so early that time for its death has not been reached. Realizing then, that we have a specific micro-organism with which to deal and that the course of infection is usually rapid and destructive to the integrity of a joint, have we a right, when this gonococcus is present, to risk the function of an important portion of the body, like a joint, by delay or by temporizing? Salicylates will not kill the gonococci; external applications or washes, liniments, ichthyol, counterirritations, will not kill them. Ice-bags and rest of the joint will not kill the organisms, but will assist the cell elements in their resistance to the infection and are certainly most helpful as an early part of the treatment. To be of service, rest must be absolute; not only must the weight of the body be removed from the infected limb, but it must during the onset of the disease be so absolutely and accurately fixed that there is no motion whatsoever at any time. This means that the patient shall not rise from bed even to urinate and that the applied splint shall be one which is absolutely fixative, like plaster-of-Paris. The use of rest, however, should be limited to the stage of acute infection and to diagnosis. As soon as effusion has occurred, the joint should be aseptically aspirated and the fluid at once examined for micro-organisms. If the effusion is small, the symptoms slight and no diplococci present, the treatment may be continued. If gonococci are found, or if the conditions are such as to render the diagnosis certain, further delay is inadmissible. Under absolutely aseptic precautions the joint should be freely opened, the fluid drained off, examined for gonococci and other organisms and the articulation washed with a solution of mercuric chlor-

ide, 1 to 6000, or potassium permanganate, 1 to 2000. The incisions for the purpose of irrigation must be made freely upon both sides of the joint, and in bad cases it is wise to puncture through the articulation posteriorly in order that the liquid may have absolute access to every portion of the joint and that no lurking bacilli shall be permitted to remain. The solution should be as hot as can possibly be borne by the tisssues and the flushing should be generous. If the washing has been thorough, drainage is unnecessary, unless the case has progressed to suppuration. When serum only is present, even though it is turbid and contains gonococci, the joint may be safely left with the wounds drawn loosely together with stitches at either end and an opening for the escape of fluid at the center. In doubtful cases a small gauze drain may be inserted. In infected suppurative ones, a rubber tube should be employed. The dressings should be absolutely aseptic. My preference is a powder of thymol diiodide or of iodol. In the cases in which there has been no pus it is better to allow dressings to remain for ten days without interference, the plaster-of-Paris splint being applied absolutely to fix the joint. This splint should be removed at the end of ten days and passive motions instituted. Should no re-accumulation occur, superheated dry air, massage and general gymnastic exercises should be persistently employed until joint function has been restored. By thus early removing the prime cause of disease, rigidity and ankylosis will be avoided and a large proportion of joints saved. If the joint refills, the process should be repeated, with or without drainage. During the past five years, since I have adopted this method of early irrigation, the proportion of disabled joints has steadily diminished. Delay means loss of joint function. The operation should be performed before serious symptoms arise, since violent infection means a crippled joint. The majority of cases are lost while the physician

is worse than wasting his time by prescribing salicylates for rheumatism.

Of course, the source of infection should be carefully treated to remove danger of fresh infection. The urethra should be gently irrigated with hot solutions of mercuric chloride, 1 to 10,000, or of potassium permanganate, 1 to 4000, alkalies given, a regimen of bland, unirritating food and drink instituted and absolute rest enforced. Our old friend, the silver nitrate, also answers admirably for irrigation, 1 to 15,000, and the newer silver salts, protargol, 1 per cent., and argonin, 3 per cent. solutions, are helpful. Methylene blue, in doses of one grain three times a day, certainly causes a diminution in the number of gonococci, while salol, by being broken up in the alimentary canal into salicylic acid and carbolic acid, renders the urine destructive to the micro-organisms. The rationale of the use of the time-honored copaiba is now scientifically explained by Oppenheim, who shows that it undergoes a change in the economy that renders it germicidal and that urine passed by a patient, after taking twenty grains of copaiba, is capable of sterilizing silk threads charged with baneful microbes.

Unfortunately, many of the cases do not come into the hands of the surgeon until the joints are partially or completely stiffened. The amount of the fluid in the articulation will now be small and gonococci, as a rule, will be absent. Our efforts must now be directed to the restoration of the function of the joint. A skiagraph should first be taken to ascertain the condition of the articular surfaces; then, under ether, moderate force should be employed to loosen the adhesions. This process should be repeated every few weeks, the intermediate periods being used for the application of superheated dry air, massage, forcible voluntary and involuntary movements, muscular development and gymnastic exercises. Long, patient and persistent efforts will usually result in great improvement and sometimes in complete restoration of function. When the de-

formity is crippling, excision or osteotomy may become necessary.

An important element in diagnosis and in treatment is the early and certain recognition of the specific micro-organism in the fluid of the joint.

Gonococci are differentiated by staining, and secondly, by cultivation. The staining is best accomplished by placing a drop between two coverglasses; after spreading, dry and immerse in alcohol and ether; the cocci will take almost any of the basic aniline dyes, gentian violet or methylene blue. When stained and placed under an oil immersion twelfth, the diplococci will be found in pairs or fours within or adhering to the pus cells. They do not mass like staphylococci, but lie in the leukocyte; when outside the cells, they are not diagnostic. There are usually several pairs within the cell and the biscuit-shaped masses lie with their concave surfaces turned toward each other. The gonococcus is not a staphylococcus, nor a streptococcus, but belongs to the group of micro-organisms known as schizomycetes; multiplication is by fission and one of the pair is sometimes larger than the other. To distinguish it from other cocci, decolorization is commonly employed, the specimen upon the coverglass being decolorized by Gram's method; if the organism is a true gonococcus, the coloring will entirely disappear, while, with the pseudococci, color will remain. The staphylococcus pyogenes, the diplococcus subflavus and the diplococcus urethræ citreus resemble the gonococcus*, but the micro-organisms most difficult to distinguish are the pseudococcus of Lustgarten and the meningococcus of Weichselbaum. To distinguish pseudococci, one must closely watch the facility of staining, the changes that subsequently occur, the method of arrangement in the leukocyte, the decolorization and all of the phenomena. Meningococci still more closely resemble the gonococci and require the close observation of all the changes mentioned.

*Gonorrheal arthritis, Vernon-Jones, 1902.

The culture-test, however, is the more certain, as gonococci will only grow on media containing albumin-serum obtained from the human body, from the pleural, abdominal or joint cavities, or from a hydrocele, and will not grow on ordinary media. The other cocci will grow on all media. After inoculation, colonizations of small grayish specks are evident at the end of twenty-four hours, the gonococci growing more rapidly than others, and at the end of seventy-two hours the irregular, rounding, distinctive, tenacious mass will be present, which will die by the ninth day. The colonies are distinctive in shape, color and size. As already stated, this growth will not take place on plain agar or gelatine without the admixture of human blood-serum.

Although Swedaiur, in 1781, had noted the connection of joint disease with the presence of urethral discharge, yet the gonococcus was not found in an infected joint until 1883 by Petrone. The first demonstration of a pure culture of gonococci as a cause of arthritis was made by Lindemann in 1892.* The mere fact of the absence of gonococci is not a proof that the arthritis is not gonorrheal, as the micro-organism may have died, but its presence is diagnostic. In suppurative cases the joint infection is usually mixed. We may have a gonorrheal infection or a mixed or a toxic infection or an infection from the products of the cocci. Various theories have been advanced as to whether infection is due to the gonococcus itself, to a pus organism obtaining entrance through an erosion in the urethra, or to a toxin produced by the action of the gonococci. The finding of the organism in both the urethra and in the joint leaves but little question as to diagnosis. Clap-shreds in the urine also show the existence of the urethral disease.

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*Beitr. Augenheilk. Hamburg and Leipsic, 1892, Vol. XXXI.
Young. Jour. Cut. and Gen.-Urinary Dis., June, 1900.
Young. Jour. Johns Hopkins Hos. Rep. Vol. IX.
also, Welch Festschrift, Balt., 1900.

The diagnosis of ordinary rheumatism, aside from the microscopical appearance, is based upon the fact that the latter is usually polyarticular, that it shifts from one joint to another, the urine is heavily loaded, sweating is profuse and the range of temperature is higher. Other conditions with which gonorrheal arthritis might be confounded are tubercular epiphysitis, especially in children, and septic and syphilitic ostitis. When the hip joint is the only one involved, the condition is masked and the diagnosis is only possible by examination of the joint fluid. Fortunately, in all these conditions, opening and washing of the joint is indicated and also drainage, if pus is present. In pneumococcic arthritis the symptoms are those of sepsis.

Conclusions.

1. Gonorrheal arthritis is a joint infection due to a specific micro-organism or the toxic products of the same, transmitted through the blood to an articulation susceptible to infection either from previous traumatism or an inherent lack of resistance.

2. The term gonorrheal rheumatism is a misnomer, both as regards diagnosis and treatment, and should be totally abandoned. Antirheumatic remedies, although they may relieve pain, will not kill the infecting organism and are useless.

3. A joint infection may take place either co-incidently with or several weeks after the apparent cure of the specific urethritis. If the joint is tapped early, the diplococcus will be found to be present; later, it may have died. Diagnosis depends largely upon the microscopic examination and the laboratory culture.

4. The only rational treatment is the prompt removal of the infecting miro-organism by arthrotomy and free irrigation with antibacillary fluids.

5. The infecting area, the urethra, should receive simultaneous thorough treatment.