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THE ETIOLOGY AND TREATMENT OF ARTHRITIS.*

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This paper deals especially with infectious arthritis, but I have purposely made the title broad enough to cover the whole field, as experience has shown that there is no distinct line of demarcation between the various kinds.

Arthritis is variously classified by different authors, but the most common forms mentioned are acute and chronic arthritis deformans, acute and chronic articular rheumatism, and infectious arthritis, the latter including gonorrheal arthritis.

I noticed an article several years ago on the infectious etiology of certain forms of arthritis and it seemed so logical that I began taking a very careful history of all our cases of arthritis with the result that I found about 65% of such cases gave a history of previous susceptibility to the ordinary pus organisms, such as the streptococci and staphylococci, or had suffered from some acute infection such as a cold, grippé, or infected teeth or gums shortly previous to their attack of arthritis.

These cases did not include the patients with gonorrheal arthritis, as we had been treating this condition with vaccines for two years previous to this time, but they did include practically every other form of arthritis.

As a history of infection, or susceptibility to infection, was the most predomi-

nant possible etiological cause, I decided to try a vaccine treatment on the most chronic case of arthritis deformans that I then had, and one of the worst cases that I have ever seen.

I used a mixed infection stock vaccine containing the most common of the pus organisms in the following proportions and numbers to the cc., a cc. being considered a full dose: bacilli colli communis, 100,000,000; diplococci pneumoniae, 100,000,000; strep. pyogenes, 50,000,000; staphy. pyogenes albus, aureus and citreus in equal numbers to make 500,000,000, a total of 750,000,000 to the cc.

The history of this case briefly was as follows:

Miss X., age 30. Arthritis deformans of nine years' duration involving both hips, both knees, both elbows, both wrists, both ankles and both shoulders, also her temporo-mandibular and several finger joints.

She had been at Hot Springs, Ark., for several years, had taken as high as sixty grains of aspirin a day for the pains for weeks at a time and had constantly gotten worse.

More and more joints became involved every year until she was confined to bed, on her back with her forearms bent at right angles to her upper arms and sticking straight up at her sides. She was unable to comb her hair or feed herself and could not turn over by herself or lie on her side after she was turned.

Shortly previous to the time I am describing she had been victimized by the then popular fad of having the affected joints broken under an anesthetic, and she had had both her hip and both her knee joints manipulated till the operator could touch her abdomen with her knees and her buttocks with her heels.

Fortunately the continuation of these inquisitorial methods was discontinued to observe the results on these four joints, otherwise I would have to write about some other case, for the treated joints very promptly set and have been set ever since.

She could not sleep, for as soon as she lost

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consciousness her muscles relaxed and the consequent movement of a joint caused her to awaken with the pain.

I started this patient on half a full dose of the above vaccine, giving her two-thirds of a full dose three days later, and a full dose every three days thereafter.

After the third dose of vaccine she dropped into a deep sleep that lasted for ten hours and the sisters at the St. Joseph's Infirmary, where she was staying, thought I had given her an opiate.

The sleep was due to the fact that the tenderness had left her joints to such an extent that when she relaxed the pain was either absent or not sufficient to awaken her.

In four months she was able to write on the typewriter and used it to write stories for the magazines. She could help herself out of and into bed, could feed herself and comb her hair, and has been able to do these things ever since.

For the last three years she has been making her living doing artistic painting of various kinds and has no hesitancy in taking an order for hundreds of little individual place cards to be used at banquets and parties.

With the exception of the joints that were manipulated she can use every joint in her body freely enough to perform the routine movements.

Summing up this case shows a woman who became constantly worse for nine years, then with no change in treatment, except the addition of vaccines, has constantly gotten better for the last five years.

This is the most stubborn case I have ever treated and is not given as a shining example of what vaccines will do for such things, as the treatment here has been too long to be practical, but I do think it shows the power of vaccines to hold even the most stubborn cases of arthritis, which are not supposed to be due to an infection, in abeyance.

I started treating several other cases of various forms of arthritis with vaccines at the same time that I started on Miss X., and they all improved much more rapidly than she did. And I have never been without several cases of arthritis on hand in the last five years, and they have all gotten vaccines no matter what else was done for them.

I have never given over thirty-nine doses of vaccine to any one patient except Miss X. I have only had four cases that failed to improve under the treatment, and I have had a great many remarkable recoveries.

Vaccine is not a popular treatment now and was a much less popular treatment five years ago. Consequently most of my cases have been of a chronic type, as the

patients are willing to try everything that is easy to take, or can be swallowed, before they submit to a series of hypodermics lasting at least a month.

I became convinced several years ago that the infectious part of arthritis was caused by two or three predominating germs and have consequently simplified the vaccine I use until it now consists of the following to a cc., a cc. being considered a full dose: streptococci pyogenes, 200,000,000; staphylococci combined, 800,000,000, and micrococci catarrhalis 100,000,000; and I give this at various intervals, depending on the susceptibility of the patient as shown by the reaction.

I have had patients who could not take over one dose every eight days, but the usual interval is three days, with the following history:

Patient takes vaccine in afternoon and feels unusually well that evening and night. Puncture red, hot and tender to the touch the next day and patient's joints feel sore. May have a degree of fever.

Second day no fever, but puncture still sore and joints worse. Third day, joints better and mark of puncture disappeared, or nearly so.

I want to report one other very chronic case treated with the last vaccine mentioned.

Mr. Y., age 50. Came to Hot Springs December 10, 1913, with arthritis deformans. Was treated by two of the best physicians in Hot Springs, but became worse and worse.

Was finally confined to bed the first week in May.

I first saw him on June 15th, when he was on his back in bed and could do nothing for himself. With the aid of a strap, tied to the foot of his bed, he could pull himself to a sitting position, but couldn't feed himself or turn over.

Shoulders, ankles, knees and wrists involved. I gave him vaccine as in the previous case reported, a full dose every three days, and he walked four blocks to my office with nothing but a cane on the 15th of September, 1914.

There had been no change in his treatment except the use of vaccine, as I could not improve on what his previous physicians had done medicinally and hydrotherapeutically.

I do not think that infection causes all the arthritis we see, but I do think that any joint that has become inflamed through any cause is very susceptible to a pus infection, and is usually infected unless it is a very acute and brief case.

I doubt very much whether 5% of the cases of chronic arthritis are uncomplicated by an infection, and while 50% of the cases of arthritis we see may not have started from a low resistance to certain bacteria, the great majority of them will improve more rapidly, and more permanently, if treated with vaccines, no matter what the principal etiological factor may have been.

Of course in the last five years it has been found that the foci of infection may be in innumerable places, such as the gall bladder, appendix, fallopian tubes, etc. And it has become an established treatment for a surgeon to drain a pus cavity anywhere in the body in the hope of relieving arthritis. I have seen some beautiful results from such treatment.

However, no pus cavity should be drained for the relief of arthritis and the patient then left to recover as best he can. The fact that the patient has a pus cavity or an infected focus means that his resistance to the specific infection is very likely below par, and he should be treated with vaccines to overcome this condition.

It is too soon to give any results, but reason and previous experience show us that "emetin" is going to be of vast value in the treatment of cases of arthritis due to infected gums, and infected gums are one of the most common causes of this condition.

Gentlemen, I do not wish to leave the impression that I think all other forms of treatment of arthritis should be abandoned and our sole reliance placed in vaccines, for I do not think that; but I do want to bring to your notice the fact that vaccines do not interfere with any other treatment you may desire to use; and that they are absolutely harmless. "I have never had a bad result from them and I have given over a thousand doses of various kinds this year." They do not cause chills or high fevers, if given properly, and the results where they are used are usually far superior and more permanent than in the cases where they are not used.

I also want to emphasize the fact that by vaccine I mean VACCINE and not serum or phylacogen, as I do not think the two latter suitable for chronic conditions.

DISCUSSION.

Dr. Nathan Barlow, Honduras.—I would like to call attention to one of the causes of chronic

arthritis which has been overlooked quite frequently. Out of a series of 30 cases which I have had, six of them were due to the presence of a parasite. In two cases there was a protozoal parasite, and in one it was due to the uncina-ria. They were all relieved by the administration of proper anthelmintics. Those cases that showed amebae in the intestinal tract were relieved by the administration of emetin or amebicides. In many cases the presence of intestinal parasites is responsible for chronic arthritis.

Dr. J. W. Torbett, Marlin, Tex.—I wish to thank Dr. Holland for his paper in bringing out the method of vaccine treatment as one of the aids in treating chronic arthritis, and especially for making reference to the use of mixed polyvalent vaccines instead of phylacogen.

I have tried all the different kinds of vaccines, because I have had a large run of the various forms of arthritis, and a vaccine for the chronic cases is a successful means of raising the powers of resistance of the patients. But the phylacogen acts too severely in these cases. That has been my experience. Mixed vaccines have often been of great help. Of course, as he has stated, the source of infection must be looked for; the gums and teeth frequently are the sources of infection. Emetin in these cases has been of great value, and I believe it will be found that emetin has some effect in raising the fighting power of the system—that is, increasing the antibodies.

Other methods of treatment should not be left off. Diet is an important factor and the increase of elimination and the proper use of hot and cold applications to increase capillary circulation and the powers of resistance are important factors.

An ingrowing toenail has been found to be a source of infection, and frequently rectal fistulae with no local soreness are sources of infection.

In other chronic cases there is no doubt the alimentary tract is the source of infection, and occasionally intestinal parasites such as strongyloides, but I have never been able to find any remedy that would eradicate strongyloides. If there is any one here who has a remedy for that parasite, I would be glad indeed to have him mention it. Strongyloides does not produce in my experience arthritis, but they produce diarrhea and nervous symptoms, with a general run down or anemic condition of the system.

Dr. James S. McLester, Birmingham, Ala.—Recognition of the danger done by focal infections represents one of the greatest advances which has been made in medicine in many years. Dr. Holland's suggestion that there first occurs an injury to the joint, rendering it susceptible to infection, does not agree, I believe, with the ordinary conception of septic arthritis. From a given focus infection frequently proceeds to a previously healthy joint.

Recognition of the focus and its eradication is, of course, always the first consideration; and, until this is accomplished, treatment will avail little or nothing.

We must not lose sight of the fact that a vaccine is like a two-edged sword—it can cut either way—and I think as used today in arthritis, vaccines do undoubtedly more harm than good. Vac-

cines made from a culture obtained from the original focus will at times accomplish a great deal, but I can not condemn too strongly the use of stock preparations. It seems to me that the mixed polyvalent vaccine which Dr. Holland discusses differs but little from the phylacogens which he condemns.

Dr. Louis Leroy, Memphis, Tenn.—The subject of focal infection, I think, explains largely the number of cases which we find associated with intestinal and other parasites of that type. I believe the intestinal parasite, the ameba, or larger parasites, as well as amebiasis of the gum, serve to keep open the focus of infection for bacteria to maintain their existence. Were it not for the animal parasite the body, by means of its defenses, would heal up the local lesion and drive the bacteria out, but with the ameba ulceration is maintained, the lesion is kept up, and bacteria are able to remain there and develop and be absorbed and spread. In that case, then, when you administer in one instance emetin you are merely getting rid, not of the thing which produces the rheumatic condition or arthritis, but are merely shutting the gate against the bacteria which are getting in and remaining in and keeping up the arthritis. As we see it clinically, practically all of our rheumatism is of bacterial origin, not always the same, but of some kind of bacterial origin. These bacteria enter in many ways, as through a fissure of the rectum and an infected gall bladder, ulcers of a tuberculous nature, syphilitic ulcers; and it makes no difference, as long as the ulceration is kept open, the portal of entry is kept open for entrance of the bacteria.

As to the use of phylacogens and mixed vaccines, there is no doubt benefit may accrue toward healing of the local lesion or the hidden focus of infection, and I am inclined to think that when we get benefit from phylacogen or from an autogenous or stock vaccine, it comes more often from the healing of the feeder than the healing of the joint. I have seen good results from phylacogen when nothing at all else would give results. I have seen good results from mixed infection vaccine and nothing from phylacogen in other cases.

Another small point is that we not infrequently with the idea of diet in mind carry starvation too far. The very idea of a more generous diet and building up of individual resistance will give you beneficial results where long-continued starvation in the past has caused emaciation and no benefit.

Dr. E. H. Martin, Hot Springs, Ark.—I believe that a majority of the gentlemen who have taken part in this discussion have been getting away from the paper, which was on arthritis, and Dr. Holland explained that he was dealing with what is known as arthritis deformans. He did not mention subacute arthritis from gonorrhea or from the tonsils or anything of that kind. When you confine the discussion to arthritis deformans you change the plan of treatment and diet from those mentioned in the discussion as suitable for subacute arthritis. A diet that is suitable for a case of subacute arthritis is one that is not suited to cases of arthritis deformans.

One symptom has been mentioned as having been found in connection with chronic arthritis

and that is low blood pressure. Low blood pressure seems not to be the cause of the trouble, but one link in the mode of its causation. There is something back of the low blood pressure, and in most instances I suspect it to be bowel absorption from some cause. The old-fashioned picture of "autointoxication" is present in nearly all these cases, so that the systolic blood pressure drops at times to 95 and as low as 78. It very rarely goes up to 100 and the pressure in the renal arteries is lower than normal and you have insufficient kidney elimination, causing more chronic arthritis symptoms and a vicious circle is formed.

I have not found any results from the use of the measures mentioned as aiding these cases. I have witnessed Dr. Holland's cases and I must say I have seen some good results in his hands from the treatment mentioned. I have tried the same treatment in my own cases, but did not have good results, so I have concluded that I did not have the right cases. I have given hundreds of doses of phylacogen intravenously and as many as forty doses to one case, with absolutely no result. I have used radium, a great deal of radium, given gratis by the company that makes it for experimental purposes, and I have had absolutely no results from radium. I have gotten some results by assisting elimination and by bathing and improving blood pressure by means of high frequency to spine and the multiplex over the abdomen, and by high colonic flushing, using from two to four gallons of water and following this up with an enema of quinine solution.

Another thing that has given great relief in some of these cases is faradic gymnastics, furnishing the patients with an apparatus for building up their muscles by artificial exercises and gradually overcoming partial ankylosis. This exercise brings the patient into a heavy sweat and the resulting elimination adds to the efficacy of the treatment.

Dr. A. B. Terrell, Fort Worth, Tex.—If every tooth that has been evolved and killed by artificial means or by natural necrosis were examined, I believe it would be found that from 85 to 90% of the teeth would show some form of streptococcus or other germs, so I think every case of this sort should have an X-ray plate made of the teeth, especially decayed teeth in the mouth.

Another point I want to bring out is with reference to the vaccine treatment. I do not believe polyvalent vaccine or phylacogen is a treatment from a scientific standpoint. We know that bacteria are just like human beings—there are no two alike. You take the bacteria found in these cases and plant them a few times on artificial media, and they change themselves completely. They have either an increased, or decreased virulency. I think we give too large doses of streptococcal vaccine, and I believe we would get better results by giving smaller doses.

Dr. Estlin D. Holland, Hot Springs, Ark. (Closing).—I do not believe there is any danger from the use of well-made vaccines, either stock or autogenous. I treat eight or nine diseases and a great many complications of diseases with vaccines; some in connection with other treatment and some with vaccine alone. I use over a thousand doses of vaccine for arthritis a year, to say

nothing of the other kinds. My experience in the use of vaccines for gonorrheal arthritis and acne has extended back seven years, for arthritis proper five years, for psoriasis two years, and with the other vaccines different periods, and I have never seen a complication or a patient in any way injured by their use.

The woman I reported has taken two or three hundred doses of vaccine for arthritis, and I had one patient take over a hundred doses of acne vaccine without any result except that the acne was cured and has remained cured for two years without any treatment.

I do not think that there is any danger from a well made vaccine, properly given, where the diagnosis is correct.

THE INFLUENCE OF POTASSIUM IODIDE ON THE LUETIN TEST.*

BY RANDOLPH LYONS, M.D.
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The practical value of the luetin reaction in the later stages of syphilis has been recently summarized by Noguchi¹, who finds that it gives a higher percentage of positive reactions than the Wassermann test in tertiary, latent and treated cases. Similar results have been reported by many other investigators. The writer has found it especially reliable in cardiovascular renal disease and has for the past year adopted the test as a routine measure in all patients with suspicious histories and negative Wassermanns.

The simplicity of the test renders it most practical of application to the practitioner, as its performance requires no special knowledge of serology or laboratory apparatus. Furthermore, the technic of intradermal injections is easily and quickly mastered.

The reaction may be considered specific in character in spite of the fact that other substances besides luetic virus have been reported as giving positive skin reactions in syphilitic individuals. In this connection it should be borne in mind that neither is the Wassermann test specific in every sense of the word.

Up to quite recently the recognition of a

positive luetin reaction presented no difficulties or pitfalls, as there were no external factors known to influence the test in any way. The investigations of Sherrick² upon the effect of potassium iodide on the luetin reaction have shown that this is not the case. In brief, Sherrick finds that a positive reaction can be obtained in 99% of all cases, irrespective of the presence of syphilis by the internal administration of potassium iodide (or iodine in any form), either simultaneously or shortly before or after the intradermal test. This observation has not to my knowledge been confirmed up to the present time. If we stop to consider how general and common is the internal use of iodine in some form, the far-reaching importance of this statement will be better appreciated. As evidence of this we even find "mixed treatment" advocated as an activator of the luetin test by Stoll and others. Stoll³ states that "the luetin test, especially if activated by a week of "mixed" treatment, is often of more value than the most sensitive Wassermann in detecting these late manifestations of syphilitic infections."

In glancing over the literature many instances of positive reactions will be found that may be attributed to the ingestion of potassium iodide. Likewise certain anomalous reactions may have been caused by this agent. In order to determine for my own satisfaction the effects of iodine on the luetin test, the following experiments were undertaken, which may be divided for convenience into two groups. The first group consisted of normal, non-luetic individuals and the second group of hospital patients suffering with various ills. In this group only six cases will be given in detail, although up to the present time more than sixteen have been tested with similar results. The luetin employed originated from the Rockefeller Institute and Noguchi's technic was faithfully followed.

First Group

Case 1—Dr. J. T. C., 24 years. No venereal

*Read by Title, Section on Medicine, Southern Medical Association, Ninth Annual Meeting, Dallas, Tex., Nov. 8-11, 1915.

1. Noguchi, "Practical Application of the Luetin Test," New York Medical Journal, August 22, 1914, c., 349.

2. Sherrick, J. W., "The Effect of Potassium Iodide on the Luetin Reaction," Journal American Medical Association, July 31, 1915, Vol. LXV, No. 5, p. 404.

3. Stoll, H. F., "The Role of Syphilis in Hypertensive Cardiovascular Disease," American Journal of Medical Science, August, 1915, Vol. CL, No. 2, pp. 178-224.