

addition a toxin able to act upon the kinaesthetic (motor) centres is but to state in other words a clinical observation and not to explain its essential nature.

4. There is still another form of motor paralysis associated with migraine—the so-called ophthalmic migraine (Charcot's "migraine ophthalmique"). I have left this to the last, as it is impossible to consider it fully in this paper, and its connexion with migraine is denied by good observers. Thus, it has been called hemicrania with third nerve paralysis.¹³ Undoubtedly cases grouped together under this head own different pathological causes. Most commonly the paralysis is confined to the third nerve on one side, but in other cases of a similar kind the fourth, fifth, and sixth (and occasionally the seventh) nerves may be also affected. The reasons why some authors have separated these cases from true migraine are that in many cases there is no aura, no heredity, the pains may last for weeks, and some degree of paralysis persists in the intervals. There are, however, other cases which satisfy all the above criteria for ordinary migraine, and in which there is a return to normal between the attacks.

Probably the accounts have been written from two distinct groups of cases: (1) Cases in which intermitting attacks of third nerve paralysis are preceded by attacks of headache corresponding in clinical aspect (including aura and heredity) to typical migraine, and do not end in permanent paralysis; (2) cases which show periodic exacerbations, but in which from the first, or early in the course of the disease, there is a certain amount of persistent weakness which ends in permanent paralysis.¹⁴

In the first set of cases we may probably go further and say with Senator and Bernhardt that there is no recognizable lesion, whilst in the second group the lesions that have been found in the few cases that have undergone pathological investigation are (1) tumours (Karplus and Thomsen) at the base of the brain involving the third nerve, (2) a mass of granulation tissue, and (3) syphilitic lesions in the same situation.

Cases of this nature, however, form a clinical group so distinct from ordinary migraine that they are better considered apart from it until more is known about them.

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ON THE VALUE OF SERUMS AND VACCINES IN THE TREATMENT OF DISEASE.

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In the hospital to which I am attached are admitted almost every variety of acute disease, some in a favourable condition for treatment, but a great many others in a very unfavourable condition, but I have included in my results all the most unfavourable cases, so that a fair and accurate conclusion as to the value of these remedies should be reached.

Acquired Immunity.

In the case of certain diseases such as small-pox, scarlet fever, typhoid, and measles, one attack protects against another for many years or even a lifetime. In other diseases such as erysipelas, influenza, and pneumonia, a person may suffer from several attacks, and in the case of erysipelas and influenza may even be more disposed to other attacks. I think it will be granted, however, that every disease produced by an organism does confer a certain immunity for a longer or shorter period. We do not know precisely how the human body recovers from an acute infection by dangerous organisms. It is presumed

that the virus becomes exhausted in a varying time, and so dies out, but it has been found that in the case of such diseases as acute pneumonia, diphtheria, typhoid, and cholera, certain antibodies antagonistic either to the organisms or their toxins are formed in the blood. It would appear that a process of immunization is going on during the course of an acute disease, and when this immunization is complete the disease comes to an end. Now we want to encourage and promote this good effect, and if by the administration of serums and vaccines we can assist the blood to produce immunity, we are going a long way towards promoting the recovery of our patient.

Antistreptococcic Serums.

I have during the last twelve years treated 210 patients suffering from acute streptococcic infections with injections of antistreptococcic serum—an antibacterial serum prepared by inoculating a horse with increasing doses of streptococci until immunity is complete, and then using the serum of the horse as a remedy. Some authorities hold that all the various streptococci are in reality the same organism modified by circumstances. Marmorek holds this view and Aronson finds that an antitoxin produced from any single strain will produce an immunity against them all. My first 28 cases were treated with a dried serum manufactured from a single strain of streptococcus which was I believe isolated from a case of erysipelas; 17 of these cases were puerperal septicaemia, all of a severe type and generally sent into hospital when the disease was far advanced. In spite of this we observed in a fair proportion of cases distinct benefit followed the injections, which were then given under the skin, and a few patients recovered whom we expected to die. I noticed that the reaction from a single strain serum was always more severe than from a serum made from many strains. Eight cases of acute erysipelas were treated with this serum and in all cases recovery followed its use without the formation of pus. The remaining 4 cases suffered from cellulitis of a streptococcal origin and in 3 cases the result was good, but in 1 it had no effect and the patient died.

In my opinion we have made a distinct advance in preparing a polyvalent serum prepared from 20 to 26 distinct strains of streptococci. We have treated 182 patients with polyvalent serum, and I can unhesitatingly say that the results are most gratifying. The more local infections appear to do better than the general systemic infections such as puerperal septicaemia, but even in this formidable disease we have obtained excellent results. It is our general practice now to inject the serum into the rectum instead of under the skin; 20 or 30 c.c.m. of serum are mixed with 40 c.c.m. of normal saline solution and gently poured into the rectum, which has been previously washed out with a little water. The serum is rapidly absorbed, and seems to act quickly and efficaciously without any toxic effects such as urticaria, erythema, or headache, which sometimes follow injections under the skin.

Puerperal Septicaemia.

The cases vary enormously in intensity, but must be carefully distinguished from sapraemia, the result of absorption from retained debris within the uterus, in which emptying the uterus generally ends in recovery. In puerperal septicaemia we have to deal with a systemic blood infection with streptococci, and we must direct our efforts to assist the blood in producing an immunity. In many cases the violence of the infection is too acute and the woman is destroyed, but in a great many instances much can be done; and, combined with general and restorative treatment, injections of 20 or 30 c.c.m. of serum twice daily seem to have a good effect. Every case of streptococcal infection, whether mild or severe, is invariably treated with rectal injections of polyvalent serum. Sometimes it is only necessary to give one or two injections before general improvement commences.

Erysipelas.

In acute erysipelas we get the very best results from serums; in fact, I look on all cases as favourable if there is no formation of pus or extensive subcutaneous cellulitis. In these cases extensive incision and drainage must be combined with large doses of serum two or three times daily.

Malignant Endocarditis.

We have treated three cases of septic endocarditis associated with rigors, sweating, and very high temperature. In one case which we did not expect to live the girl, aged 20, recovered, and was discharged with a loud systolic rough murmur, but with all infective signs in abeyance. She returned to hospital two months ago with a reinfection, and at once asked for some more injections, as she had felt benefit three years ago. A few were given, and she is decidedly better. In the other cases, beyond temporary relief, no real benefit was obtained from serum.

Acute Tonsillitis.

Nearly all these cases are due to streptococci, often they relapse, and are associated with severe constitutional symptoms. If we can get these cases before the formation of pus, a few injections will actually abort the attack, and the patient gets rapidly well. Even if pus has formed, serum seems to relieve the symptoms, and certainly prevents the debility and severe toxæmia which so often follows. In operation on the jaws and tongue, especially for malignant disease, where septic bronchitis and pneumonia sometimes follow, a dose or two of serum before operation often has an excellent effect in preventing secondary sepsis.

Antidiphtherial Serum.

I am a profound believer in this serum, both as a curative and as a prophylactic remedy. In 1894 I had the pleasure of recording in the BRITISH MEDICAL JOURNAL a number of cases of diphtheria treated with Aronson's serum, and since then I am more and more convinced of the value of the serum; if given within forty-eight hours of the onset of the disease it is almost a specific remedy. Associated with diphtheria there is often secondary infection with staphylococci, and these cases can often be cleared up after the diphtheria is over by preparing vaccines from the discharges from the nose, ear, and throat, and injecting them into the patient.

Antitetanic Serum.

I have not seen a case for over six years, but we treated eight cases; four of them were acute, that is, the symptoms developed within seven days, and were all fatal. In the remaining four cases the symptoms were delayed until after ten days, and they ran more or less a subacute or chronic course. In all the cases we gave large doses of serum, and all seemed to be benefited. In one the dried serum was given by the mouth in the intervals between the spasms, and strange to say the boy recovered. It is difficult to estimate exactly the effect of the antitoxin, as many cases of subacute tetanus recover without it, but my impression is that it helps, and I should always be inclined to give it.

Tuberculosis.

Maragliano's serum for tuberculosis is prepared from the blood of a horse which has previously been immunized with living cultures of tubercle bacilli; 1 c.cm. is injected on alternate days. The serum is said to be bacteriolytic as well as antitoxic, and Maragliano claims to have obtained excellent results in cases of tuberculosis without secondary infections. I have used the serum in fourteen cases of pulmonary tuberculosis, and although in some instances good effects seemed to follow its use, I have discontinued it in favour of tuberculin.

Vaccines.

The greatest care must be taken in the preparation of vaccines, and personally I have only used those which have been prepared for me. It may not be strictly correct to include tuberculin amongst the vaccines, but for my present purposes it is convenient.

Tuberculin from Human Sources.—With Koch's tuberculin R., which is prepared from bacilli of human origin, 110 cases of tuberculosis have been treated, including tuberculous glands in the neck, tuberculous peritonitis, tuberculous joints and sinuses, lupus, tuberculous meningitis, and genito-urinary tuberculosis. In the localized forms of tuberculosis, most of which I believe to be of bovine origin, and conveyed to children in infected milk, I am convinced that Koch's tuberculin R. has an excellent effect, except in those patients in whom there is some

pus encysted in the body, whether in the interior of the joint or in a bone under pressure, or as an abscess in a lymphatic gland. In these cases there is a danger of tuberculin causing dissemination of the bacilli, with a resultant blood stream infection. It is a good rule never to give tuberculin if any pus is localized in the body. In many cases a course of tuberculin has had the effect of greatly reducing enlarged tuberculous glands of the neck, by dispersing the peri-adenoid tissue and causing a general freeing and loosening of the glands themselves, while in some the enlarged glands have entirely disappeared. If, however, there is any tendency to suppuration the glands must be opened, and in all cases the pus should be liberated. I feel convinced, however, that the extensive dissection of glands in the neck is wrong in principle, and sometimes leads to a general tuberculosis which is fatal. In tuberculous peritonitis tuberculin has a splendid effect, and, combined with operation and drainage, many of my cases have been completely cured. In genito-urinary tuberculosis ten or twelve injections of tuberculin has often had an excellent healing effect when everything else has failed.

Pneumonia.—The Klemperers were the first to attempt the treatment of pneumonia, and Washbourn did some splendid work on the subject; latterly Wright has brought out a pneumococcal vaccine carefully standardized. We have used injections of this remedy in twenty-eight cases of acute lobar pneumonia. Only in severe cases were the injections given, and in thirteen which recovered we thought we had observed some reaction of a favourable character, such as immediate reduction of temperature and pulse with the onset of perspiration. Personally I would like to preserve an open mind on this remedy, but I am inclined to the belief that it does good. In one case where a whole family developed pneumonia one after the other I gave a prophylactic injection to a daughter who had been nursing the mother, and she certainly escaped infection, but whether or not it was due to the injection I cannot be certain.

Staphylococcal Infections.—It is here that the very best results of vaccines are obtained. In acne of a pustular nature, boils and carbuncles, after the nature of the infecting organism has been determined, a corresponding vaccine has in a large number of cases led to complete and lasting recovery. Even in cases of boils and carbuncles associated with glycosuria vaccine treatment has been useful, but not to the same extent in cases of diabetes. It is my usual practice to make a growth from the patient, and then to obtain the corresponding vaccine from the laboratory. In many cases of acne of a chronic indurative character, however, we must be prepared for disappointment.

Coley's Fluid.—This powerful remedy is reserved for those cases of inoperable carcinoma or sarcoma in which every other form of treatment is useless. I have frequently observed in hospital that an acute attack of erysipelas will devour and clear up a growth or even an attack of lupus, and Coley's fluid is based on this principle. I have used it in 9 cases, 7 of which were uninfluenced, and 2 recovered. In 3 cases in which it is being used at present slow necrosis and an arrest of the growth is commencing. It is a most dangerous and powerful remedy, and must be used with the greatest caution; even half a minim sometimes produces the most violent reaction with a temperature of 105° and a pulse of 130. The reactions, however, become gradually less, and even 5 to 6 minims may be tolerated in a few weeks. In all otherwise hopeless cases it is justifiable to try it, as in some patients we get a happy surprise.

Typhoid Fever.—Wright has been the pioneer in the vaccine treatment of typhoid fever. His vaccine consists of cultures of *Bacillus typhosus* grown in broth for four weeks, and then sterilized by heating for ten to fifteen minutes at 60° C. A small amount of carbolic acid is then added for preservation and to ensure sterility. Favourable results have been recorded from all over the world, and it is possible that by its uniform adoption a great decrease in the death-rate from typhoid will follow, more especially abroad. We have used Wright's vaccine in eleven instances, nine of which recovered. The other two patients both died from perforation and hæmorrhage. I cannot be sure that the vaccine was of any real benefit; it appears to be more suitable as a prophylactic than a curative measure.