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BRAIN SYPHILIS, WITH
COMMENTS.

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REPORT OF TEN CASES OF BRAIN SYPHILIS, WITH
COMMENTS.*

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ONE always feels a certain degree of hesitancy in directing attention to a subject which has apparently been viewed and studied from every standpoint, but there is always this that can be offered in apology, that no matter what the pathological conditions or clinical manifestations may be in general, they will vary individually, according to the variations in the characters and qualities of the causative agency, in the reactions of the nature and constitution of the individual to that agency, and in the makeup and ability of the observer; consequently, any report that may be presented, cannot fail to bring out some points of interest, even though it may overlook others of equal or perhaps greater importance.

It has often been demonstrated, that no matter what the subject, or how it is presented, if in so doing it offers but a single thought which will enable us to more clearly comprehend, or to more rationally control that condition, the time and energy utilized in its development, or given to its presentation, is well spent.

So far as the causative agent in this diseased condition is concerned, it is now generally accepted that it is unquestionably a parasitic infection, but there is yet much to be learned in regard to its morphological characters and physiological functions. It is reasonable to assume, however, that it, like all other organisms so far studied, varies in its different

*Read before the Marion County Medical Society and before the Indiana State Medical Association.

properties and characters, and also that there may be different species of the same order. This assumption, furthermore, is supported by the different results produced in different individuals and under different circumstances, yet we must not lose sight of the fact that those variable results may be due in whole or in part to just those different conditions, or different circumstances.

It is well known that the intensity or extent of the primary infection is no positive indication of the virulency or infectiousness of the organism as manifested by later developments. It is not at all an uncommon event to see cases in which the primary infection is or has been so slight as to almost or even quite escape one's notice, and yet the later manifestations prove to be most intense, virulent and vicious, while on the other hand, we also see cases in which the primary infection is extensive and virulent with the later pathological and clinical manifestations quite insignificant and practically nil. With such variability in the causative agent, it is but a natural sequence that there should be a corresponding variability in the results produced.

The second factor refers to the variations in the reactions of the constitution and nature of the individual to the causative agency. It yet remains to be determined to what we must attribute the individual's powers of resistance against injuries or deteriorating agencies. Many theories have been offered in the past, are being promulgated at present, and will be formulated in the future, as to how, when and where the various so-called protective bodies are determined and formed and in what manner they exercise that function. Various apparently plausible explanations have been worked out as to why in the one case we find abundance and activity of these protective bodies, while in another case they are few in number and apparently inactive. Whether this problem will ever be definitely solved, time alone can tell. Life and its processes beyond a certain stage, has ever been beyond the analytical grasp of scientific investigation. Science as yet has not been able to directly convert inorganic material into living protoplasm, nor infuse into it the power of

exercising those faculties and properties inherent to such living protoplasm.

A similar difficulty awaits us in attempting to explain why in the one case the meninges of the brain appears to be the structure predominantly affected, at one time the dura, at another time the arachnoid, at one time the basal portion, at another the convexial, at still another the general. Also, why, in a second case, we find a localized gummatous formation,—in a third, structural change in the larger arteries or veins,—in a fourth, a diffuse involvement of all of the structures, meninges, blood vessels, interstitial tissue and the neuronics elements, and in a fifth, a degenerative change involving, apparently, primarily the neuronics elements themselves. Many other features of these cases could be alluded to, in which any attempt at explanation only leads us into the realm of imaginative theory in regard to the variations enumerated.

Variability in the makeup of the observer is another factor that comes into consideration which is at once so evident as to call for no further discussion.

The reports of the following cases point out some of the symptoms and features which should always arouse suspicion of the possibility of a specific infection being the causative factor:

Case 1. Female. Age 40. Negress. Gives a history of luetic infection 15 years before the onset of the present trouble. Previous health, so far as could be ascertained, was good. Was taken rather suddenly with a severe right facial neuralgia which responded promptly to potassium iodide administration. About two months later she was seized with dizziness, clonic spasms in both arms, becoming semi-conscious and later unconscious with weakness of the right arm and leg. After a few days consciousness was regained, but there still occurred several attacks of clonic spasms in the right arm, dizziness, pain in the left side of the head and photophobia. No marked alterations in pulse, temperature or respiration. No disturbance of special sense. The condition completely disappearing under the administration of potassium iodide.

Case II. Male. Arabian. Age 33. Complained of intense headache of several months' duration with some digestive disturbances, but no vomiting. Later he was troubled with disturbances of vision, principally that of seeing double. He became stuporous, indifferent to his surroundings, apathetic, somnolent, the headache decreasing as the drowsiness increased. At the time of the examination he was well-nourished, his movements were sluggish and without energy. He was listless and apathetic, mentality was slow and somewhat confused. Facial expression flabby. The left internal rectus was paretic. There was some drooping of the left upper eyelid, some apparent protrusion of the left eyeball, dilatation of the left pupil, both pupils non-reactive to light, reaction to accommodation doubtful.

Vision in the right eye, hazy and indistinct, in the left eye could barely distinguish light from darkness. The right disk showed considerable swelling, the left a well marked neuritis. Disturbances of sensation or motion elsewhere could not be obtained, but he complained greatly of a constant feeling of fatigue and of being easily tired out on exertion. Knee-jerk was absent on the right side.

He gave a history that his wife, who had been previously married to an American, had contracted a bad private disease from her first husband as a result of which she had lost all her hair and was otherwise sick and claimed to have contracted a similar condition from her.

After several weeks of antisyphilitic treatment, the digestion improved, headache became less severe, stupor and somnolence decreased, mentality became quicker and clearer and vision improved so that sight in the right eye was fairly clear, while in the left eye, he could only distinguish much difference by dropping the head and looking out of the upper part of the eye. About this time the patient decided to return to his native land, since which time nothing has been heard of the further progress of the case.

Case III. Male. Age 42. Engineer. Previous health was reported as good, could not elicit any history of syphilitic infection.

The present illness began several months before the time of examination with a rather indefinite change in the manner and disposition noticed by his fellow workmen. Upon returning home from his work as usual one day, his wife noticed that he acted what appeared to her as rather silly and childish and upon being asked what was wrong, replied: "Durned if I know," and upon attempting to eat, seemed unable to masticate the food well and also to swallow it. He became emotional, excitable, irritable, disoriented and confused to the extent of necessitating his committal to the insane hospital. Examination showed him to be well nourished, of powerful physique, inattentive to and non-observant of his surroundings. Facial expression flabby, being more marked on the right side—tongue, lips and hands were tremulous, speech thick, tremulous and drawling, leaving out syllables and words,—saliva dribbled from the mouth and there were frequent ineffectual attempts at spitting. Movements in general were inco-ordinate and ataxic, gait was waddling and apparently weak, the weakness becoming more marked on exercise,—the feet dragging, due, apparently, to an inability to lift them; the knee-jerks were exaggerated greatly, Romberg's phenomenon was marked, ankle clonus was marked, Babinski's reaction prominent, all more marked on the left side. Both optic disks were considerably reddened. In spite of anti-syphilitic treatment, both dementia and paresis progressed rapidly. Finally the organic musculature became involved and the case terminated fatally in about three months.

Autopsy disclosed a localized meningitis and gumma formation, irregular in outline, about ten C. M. in length by five C. M. in breadth and nearly one C. M. in thickness over the anterior, external part of the left frontal convolution, a similar mass over the inferior part of the right Rolandic area and the third gummatous mass in the substance of the left optic thalamus.

Case IV. Female. Age 40. Previous health was reported good, and a history of specific infection could not be obtained. In August, 1906, upon arising from bed one morning, she was suddenly seized with what appeared to

be a stroke of apoplexy, loss of consciousness, complete motor aphasia, paralysis of the whole right side, inability to close the right eye, tongue deviated to the right on protrusion. Sensation was at first decreased, but completely recovered in a short time. She regained some motion in the leg. The right arm became flexed, pronated and rigid. The facial paralysis almost wholly disappeared. The deep reflexes on the right side became greatly exaggerated. Babinski's reaction was marked on the right side.

After having so far recovered as to be able to move about the house unassisted, about two months later she was suddenly seized with convulsions, became unconscious and rapidly passed into coma and death.

Autopsy disclosed a well-marked syphilitic endarteritis with thrombosis of the left middle cerebral artery and softening of the parts of the cerebrum supplied by the occluded vessel.

Case V. Female. Age 53. Complained of intense headache, orbital, frontal and suboccipital, of soreness in the abdomen, mostly across the stomach and around the small of the back, of gas in the bowels and of constipation.

The patient said that she was not robust as a child, yet was never confined to bed. Began to menstruate at 14 and always suffered severe pain, usually requiring medicine to alleviate it. Was married at the age of 18 and shortly after suffered from a severe attack of so-called acute inflammation of the uterus lasting several months. Had several attacks of malaria at different times during her earlier life. Had always suffered more or less from neuralgia and headaches. About five years ago she had several small, hard ulcers in the vulva which healed with difficulty.

Two years ago she began to suffer with the present pain in the head for which she consulted different physicians, some attributing it to the kidneys, some to the nose and throat, some to the stomach and also to the eyes, receiving from each the corresponding treatment. About eight months ago, she began to suffer from double vision which lasted about three months and also from spells of dizziness and periods of somnolence. The patient was poorly

nourished, of sallow complexion, inclined to be bald, and complained of tenderness over the right occipital region on percussion and pressure. Special senses, speech, sensation and motion normal. Ophthalmoscope revealed well marked choked disk in both eyes. There was moderate arteriosclerosis. Spleen was enlarged and floating. Sigmoid colon was tender. Intestines were distended with gas. Superficial reflexes were active. Knee jerks active. A questionable left Babinski reaction. Urine contained some albumen, some pus cells. No casts. Excess of oxalates.

About a week later there developed a rather acute complete left hemiplegia followed by delirium and involuntary evacuation of the urine and faeces. After a few days the mental state cleared up and after some weeks the paralytic condition began to improve and progressed so far as to have recovered almost complete use of the leg but the arm was more or less spastic and in a state of contraction. The physical condition, otherwise, was better than it had been for years and the whole condition seemed to be improving under the iodide administration.

Case VI. Male. Age 31. Clerk. Gives a history of periodical intemperance for some years until about eight months ago, soon after which he began to complain of loss of memory and dizzy spells, the latter being followed by an inclination to somnolence and sleepiness but remained fully conscious of his condition and surroundings. After several months, mental disturbances developed, necessitating his removal to the hospital for the insane.

Upon examination he was found to be well-developed and well nourished, facial expression was listless and apathetic. He appeared to be more or less drowsy and stupid. Was slightly deaf in the left ear. Movements in general were inclined to be spastic and inco-ordinate. The tongue, lips and hands were tremulous. Speech was paraphasic, almost typical of general paresis. Gait was uncertain and inco-ordinate. Knee-jerks were greatly exaggerated, more so on the right side. Ankle clonus was more marked on the right side. Rhomberg's phenomenon marked. Babinski's reaction in the right foot.

A few days after examination he became profoundly somnolent. Right hemiplegia developed. The right external rectus became paralyzed, breathing stertorous, superficial reflexes abolished, swallowing difficult and after a few days coma, convulsions and death.

Autopsy disclosed a syphilitic basal meningitis, a syphilitic endarteritis and thrombosis of the left middle cerebral artery.

Case VII. Male. Age 25. Tool-maker. Complained of an inability to talk well, nervousness, tremor, being excitable and easily irritated and of inability to work. His previous health was good. At the age of fourteen he contracted lues, for which he underwent treatment for about five years during which he was several times mercurialized.

About nine months ago while walking about the city one afternoon he was suddenly seized with a feeling of faintness, some weakness in the left arm and some difficulty in speech, but was quite able to walk home and felt perfectly well otherwise. Upon the advice of the physician consulted in regard to the speech disturbance he remained in bed several days, but apart from the speech disturbance, which was apparently paraphasical, the report is that he felt well. After some weeks he became nervous, tremulous, irritable and excitable, easily incited to outbreaks of anger and very difficult to get along with, at times manifesting some mental confusion. Occasionally he suffered from a moderate headache. Improvement had progressed so far that he had arranged to resume work when he was again seized with an attack of more marked speech disturbance and more or less mental excitement.

Examination at this time showed him to be only moderately nourished. Nervous, excitable, emotional, he showed marked tremor of the lips, face, tongue and hands. Speech was almost typically paretic. The tongue deviated to the left on protrusion and its movements were spastic. At times he was unable to recall words that he wished to use. Writing was tremulous and typically paretic. The tremulousness was increased by excitement or strained efforts to correct. The right knee-jerk was more increased than the

left, both being greatly exaggerated. Some tendency to right ankle-clonus, no Rhomberg and no Babinski reaction. Blood vessels markedly sclerotic. Urine contained some albumen and a few hyaline casts. Mentally, there was a tendency to excitement, obstinacy, more or less confusion and uncertainty. About three months later shortly after awakening one morning he was seized with a severe tonic convulsion lasting several minutes which was followed by a semi-comatose condition lasting about twelve hours.

Following this he had repeated convulsive seizures, involving the left side of the body, the face most, the arm less and the leg least. These gradually grew less severe, at times consisting only of a turning of the head and eyes to the left and some clonic contractions of the corresponding facial and ocular muscles. Consciousness was lost in all of them, but was to a great extent regained immediately after the seizures ceased, sometimes even before. There was almost complete paralysis of the left side involving also the tongue. Sensation appeared to be somewhat decreased, although this may partly have been due to the dulled sensibility generally. The knee-jerks were greatly exaggerated. There was present a left Babinski reaction. He also manifested considerable delirium for several weeks. After this the mental condition revealed at times mild delusional ideas of threatened harm to himself and occasionally to his wife, the former at times leading him to covering himself with the bed clothes or trying to hide behind the screen. The paralysis gave way to a condition of paresis and the movements in general were spastic and inco-ordinate to some degree.

This is practically his condition at the time of writing with his general physical condition otherwise fairly good. The condition is regarded as a syphilitic vascular disturbance with thrombosis of the right middle cerebral upon which was engrafted a probable right side haemorrhagic pachymeningitis.

Several months later this case developed projectile vomiting, rigidity and retraction of the head, somnolence, rise of temperature to 107 and 108 degrees F., coma and death.

Case VIII. Male. Age 37. Tinner. Gives a history

of gonorrhoea at 18. Has never required any medicinal treatment otherwise. The present illness began about one year ago by more or less mental disturbances associated with attacks of unconsciousness, but no convulsive seizures followed by paralysis of the left side of the body, involving mostly the arm, passing off within a day or two.

His facial expression was apathetic and apparently confused, manifested considerable dementia, also tremor of the lips, tongue, hands and feet. Speech was slow, stumbling and tremulous. Writing was tremulous, being exaggerated by excitement or voluntary efforts to write to such a degree as to cause the left hand to shake vigorously during such efforts. Gait and general movements were inco-ordinate and inclined to be spastic. Superficial reflexes were decreased. The deep reflexes were increased and all more marked on the left side. Romberg's phenomenon was present, also Babinski's reaction on the left side. The palpable blood vessels were slightly sclerotic.

Under anti-syphilitic treatment, recovery appeared to be complete.

Case IX. Male. Age 30. Laborer. Gives history of syphilis ten years ago. Previous health otherwise good. The present illness began with extreme nervousness and violent headaches. After some months, the length of time uncertain, he began to manifest some mental disturbances, becoming incoherent in his conversation, his manner and actions, developing delusions of impending harm and subject to outbreaks of excitement and violence toward those about him. He gradually became more and more demented, childish and silly in his manner and actions, very emotional, irritable and excitable, acquired a feeling of general exaltation, both physical and mental. The headaches disappeared. There gradually developed bilateral paralysis of the external ocular muscles, fixation and inequality of the pupils, advanced optic atrophy, impaired vision, pareses of the facial muscles, pronounced paraphasic disturbances, exaggerated knee-jerks, some general tremor, inco-ordination and muscular weakness. After several weeks general convulsions developed followed by coma and death.

Autopsy disclosed a well-marked syphilitic basal meningitis and more or less general meningo-encephalitis.

Case X. Male. Age 38. Clerk. Jew. Was quite healthy as a child. Drank heavily from the age of 15 to 27, but has been practically a total abstainer since. Said to have contracted venereal disease about eleven years ago.

Was perfectly healthy until two years ago when he began to manifest some irritability and to notice that the memory was not as reliable as formerly. About eight months ago he began to suffer from spells of numbness in the hands and some difficulty in speech, lasting about five minutes, recurring every two or three weeks and occurring mostly on Sundays, beginning sometimes in one hand, sometimes in the other and extending to the jaws and tongue, involving speech. Some months later the condition extended to the lower extremities, which also felt weak and was associated with some twitching sensations in the muscles affected. During this time he also suffered from attacks of dizziness, occasional headaches and more marked impairment of memory. The day previous to the examination he suffered from an attack of greater severity than ordinarily and following which he became extremely nervous, restless, excitable, exalted, talkative and emotional.

The clinical picture was typical of general paresis in a hypermaniacal state. He became acutely maniacal, necessitating his removal to the hospital for the insane where he died within two months in a condition of maniacal exhaustion.

His father died at 88, more or less demented, following an apoplectic seizure received twenty years before, resulting in complete right hemiplegia and aphasia. Mother died at 69 of gastric carcinoma. One maternal uncle died of tuberculosis.

Autopsy was not permitted.

In reviewing the clinical data of these ten cases, it will be seen that they correspond in general to those usually given by the various authorities on this diseased condition.

The age varies between 25 and 53, one before 30, five between 30 and 40, three between 40 and 50, one after 50.

The interval between the time of inoculation and of the

manifestation of the first symptoms varies from five to fifteen years. In four, a history of infection was not obtainable, yet the positive findings at autopsy in three of the cases and the prompt and positive response to antisyphilitic treatment in the fourth, establish a positive diagnosis.

Three were females and seven were males.

The onset in two cases was sudden, in eight gradual. Of the former one began with an apoplectiform insult, the other with aphasic disturbances and a general feeling of faintness and weakness. In the former, consciousness was lost, in the latter it was retained. In those cases with a gradual onset, six manifested mental disturbances from the beginning, three motor disturbances and five sensory.

Mental disturbances were present in eight of the cases at some time during the course of the disease.

Loss of consciousness was present in seven cases—in one, it was one of the earliest symptoms; in two, it occurred at different times in the course of the disease; in four, it was a terminal manifestation.

Headache was prominent in five cases, being an early symptom in three of the cases.

Dizziness was complained of in four cases, somnolence was evident in the same number.

Pupillary inequality was present in two cases, the Argyle-Robertson phenomenon in two, disk changes in four, visual disturbances in three, photo-phobia in one, and paralysis of external ocular muscles in two.

Facial neuralgia of the right side was the earliest and apparently the only early manifestation in one case.

Disturbance of speech was present in six cases, in one being of purely motor character, in the others, more of a paraphasia. In one case, it was the earliest and most prominent manifestation.

General muscular weakness was present in four cases, right hemiplegia in three, left hemiplegia also in three. In one, the hemiplegia immediately followed the apoplectiform onset, in two, it was an early manifestation and in the other three, it developed later in the course of the disease.

Tremors were present as a marked feature in five cases; inco-ordination in six, ataxia in two and spasticity in one.

The superficial reflexes were increased in one case, decreased in two and apparently normal in the others.

The deep reflexes were decreased in one case, apparently normal in two, increased in the other seven and in the hemiplegic cases, always more marked on that side.

Rhomberg's phenomenon was present in three cases, Babinski's in five. Convulsions were manifested in four cases, localized spasms in two. Sensory disturbances were present in four cases, digestive disturbances in the same number.

Of these ten cases, two apparently recovered under anti-syphilitic treatment; three improved and in one of these it is still progressing, while in another, a third recurrence of acute manifestations developed; two died of thrombosis of the left middle cerebral artery, one of multiple gumma; one of meningo-encephalitis and basal meningitis and one of maniacal exhaustion.

These cases, in a measure, pretty accurately indicate the different pathological processes by which a syphilitic infection may involve the nervous structures, namely:

1. By meningeal involment.
2. By gummatous formations.
3. By vascular changes in the larger vessels.
4. By diffuse changes, involving more or less all of the structures—a so-called meningo-encephalitis.
5. By degenerative changes primarily.

The first four conditions are usually regarded as so-called secondary or tertiary processes, generally occurring anywhere from two to fifteen years after the primary inoculation, although cases are also reported in which symptoms of cerebral involvement were manifested, while traces of the initial sore still existed. (Kahler.) Swartz, Wood and others report a number of cases occurring within two to three months after infection. Ogilvie, in tabulating the time of the onset from statistics gathered by him, came to the conclusion that in at least 60 per cent manifesting symptoms of intracranial syphilis it occurs within five years after infection.

The last condition differs from the others in the probable mode of development and course of the structural changes of the clinical manifestations, and in its non-responsiveness to antisyphilitic treatment. It is generally regarded as the result of the action of a toxine, produced in the body either directly by the specific organism itself, or indirectly by the reaction of the tissues induced by them, which, if not the direct cause, at least predisposes to it by its modification of the processes of metabolism in such a way as to lessen the power of resistance and to favor the development of the characteristic changes. The latter supposition seems to be the more probable from the fact that in a certain percentage of cases, similar clinical manifestations and pathological lesions are found in the absence of any history or other evidence of syphilitic infection which are apparently induced by other agencies, and yet one can scarcely regard it as a mere coincidence that in so large a percentage of cases of general paresis, given at about 80 per cent., a definite history of syphilis seems assured, and in so many of these it is not at all uncommon to meet with cases in which there are at first definite and apparently positive indications of brain syphilis and later develop the characteristic clinical picture of general paresis.

It is at times most difficult—one may safely say impossible—to differentiate between these two conditions, especially those in which one or the other of the two last named pathological conditions enumerated is probable. This fact has led to some difference of opinion amongst authorities in regard to the primary pathological changes occurring in general paresis, some claiming that the primary change is a degenerative one beginning in the neurones with the vascular and interstitial changes arising secondarily, (Molt,) while others regard it as primarily vascular in origin, with the degenerative changes arising secondarily, and still others that the meningitis or interstitial change is the primary one. But it has been determined that there exists no relative proportionality between the glia proliferation on the one hand and the destruction of the neurones on the other.

So, also, has it been found, that not infrequently there

exists a rather intense cortical disease with a relatively mild meningeal disturbance. Since all of the elements entering into the construction of the nervous system are more or less involved in all well marked cases, sometimes the changes being predominant in the one element, sometimes in the other, it appears justifiable to assume that the fundamental pathological anatomy is a diffuse change involving more or less all of the structures.

Some authorities do not include general paresis under the clinical group of intracranial syphilis, even though recognizing the prominent causative relationship between the two. This close and intimate relationship is clearly indicated in the reports just given and certainly seems to offer considerable justification for including them under that classification.

The diagnosis of these conditions is at times relatively easy and evident, at other times most difficult. Since the positive determination and identification of the parasitic nature and of the more or less specific serum reactions present in syphilitic individuals has been placed upon a more definite basis, the diagnosis can be made with almost absolute certainty. But the minutiae and details of the methods necessary to carry out these examinations render it so difficult, require so much time, that they are practically inapplicable except in well equipped laboratories and by regular laboratory workers, hence the great majority of clinicians still have to rely upon the history, the clinical manifestations and the results of the treatment.

Even though there is not any one sign or symptom that can be regarded as pathognomonic of a syphilitic condition, yet there are some general features of the clinical manifestations which should always arouse one's suspicion of such a basis.

Some of the more prominent of these are:—

1. Changeability and multiplicity of symptoms.
2. The onset of manifestations, being sudden rather than acute, sub-acute rather than chronic.
3. The disease running a course more or less in stages, showing,
4. A tendency to remissions and recurrences.
5. The accompanying pareses and paralysis being

transitory and changeable, corresponding more or less closely to the pathological-anatomical alterations at the basis.

6. The usually ready and prompt response to appropriate treatment outside of the vascular and degenerative condition.

Lumbar puncture at times also furnishes valuable information, for according to some French authors, an increase of leucocytes in the cerebrospinal fluid in the absence of a suppurative condition, is indicative of a syphilitic nature.

The specific serum—reaction of Wasserman—which requires the employment of an extract derived from syphilitic tissue in conjunction with the serum of some animal (rabbit) immunized to the blood of some other animal, (sheep), is too complicated and difficult to be utilized except by regular laboratory investigators. The same may be said of Noguchi's serum reaction. Noguchi has also reported successful results with a so-called butyric acid reaction, which, if it prove reliable, is much easier of application, so that it can be utilized in the busy life of the clinician.

Some other investigators have been experimenting with a solution of taurin along similar lines and with this the writer has had some experience, but the number and results of such examinations are not of such a nature as to justify any report being made or conclusion drawn.

With all these investigations there will doubtless eventually evolve some method of facilitating the establishment of an earlier and in doubtful cases of a more positive diagnosis of a syphilitic basis in diseases of the nervous system and so enable one to adopt the earlier and to carry out the necessary treatment so long as there is evidence of the presence of any syphilitic infectiousness or toxicity in the tissues or fluids of the body.

It will be seen that the prognosis in this diseased condition is not a very bright one. This unfavorable outlook, to some extent, depends upon the particular pathological lesion existing at the time. The meningitic and gummatous conditions apparently yield the most readily to treatment, the arterial and diffuse changes much less so and the so-called degenerative changes least so, if at all.

The treatment in all cases must be actively and vigorously antisyphilitic and whatever special method may be followed, must be based upon the peculiarities and susceptibilities of the individual patient and upon the effects resulting from the method adopted.

As a preliminary measure it is always essential in every case to ascertain the exact condition of all excretory channels and to place them in the best of functioning order before instituting very active antisyphilitic measures, otherwise one must not be disappointed if results that *should* follow are not forthcoming.

It is not at all uncommon to meet with cases who report having been subject to prolonged administration of mercury and iodide even to the point of salivation or of iodism, without any apparent benefit, more likely harm, and yet, where proper precautions are taken to insure good absorption and good elimination, respond readily to such measures.

It is impossible to lay down any hard and fast rules. Observation and experience alone enable one to determine what will be best in each individual case.

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