made use of it as a prophylactic measure, but believe it is better than the more elaborate measures if one is going to make routine use of some method of hemostasis.

If my contention is right, the high mortality following prostatectomy is unnecessary and is to be avoided in two ways: first, by getting kidneys that are not doing their work into a condition where they are acting efficiently; second, by avoiding injury to embarrassed or susceptible kidneys at the time of operation. According to my belief, the question of the mortality can be and has, in most instances, been settled, before one begins his prostatectomy. The question hinges almost wholly upon the condition of the kidneys, or perhaps, to speak more accurately, upon the functioning of the kidneys. The task of getting them into condition must be done before operation. A certain amount can be done after operation, but for the most part whether or not a patient is going to recover has been decided before we begin our prostatectomy and depends upon the renal function.

MAGNESIUM SULPHATE IN PURULENT CEREBROSPINAL STREPTOCOCCIC MENINGITIS.

HISTORY OF A CASE COMPLICATING ACUTE OTITIS MEDIA, COMPLICATED BY PARALYSIS OF EXTERNAL AND INTERNAL RECTI OCULI.

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IN the case of purulent streptococcic cerebrospinal meningitis here recorded, the treatment employed was so beneficial in its results, and those results were so encouraging—the patient recovering completely from the cerebrospinal meningitis, and living longer after the onset of the disease than in any other case hitherto reported—that the author is convinced the same method used in other cases might prove entirely successful in its final outcome. This assertion is based on the fact that the patient treated by the author succumbed in the end, not to the original disease, all symptoms of which had disappeared long before, but to complications which allowed repeated recurrence of local infection, and finally caused death through encephalitis.

The treatment consisted mainly of three things,—decompression, local drainage, and the internal use of magnesium sulphate, which last is, to the best of the author's knowledge, a new procedure in meningitis.

The patient was a man of twenty-two years, whose general health was good, and who had had no previous trouble with his ears. He was first seen by the author on the night of September 23, 1911, in the clinic of Dr. Robert Lewis of the New York Eye and Ear Infirmary. Ten days before admission to

the infirmary he had been troubled by a pain in the left ear and by slight deafness, and when he entered Dr. Lewis' service he had already passed into a typhoidal state, with a temperature of 102.3-5°, a pulse of 56, and a severe headache, and showed stupor and slight delirium. When roused, he answered questions very slowly. His neck was rigid, there was no patellar reflex, only a slight Kernig reflex, and altered Babinsky sign. He evidenced descending optic neuritis of the left eye. An aural examination showed the left meatus edematous, full of pus, and very tender. The tongue was foul. The spinal puncture showed the spinal fluid under very high pressure, containing pus and cocci in pairs and short chains. An examination of the blood gave the following results: Red corpuscles, 5,200,000; white corpuscles, 18,000; *differential count*, small mononuclear 10%, large mononuclear, 5.6%, transitional 8%, polynuclear 83.6%. The urine showed neither sugar nor albumen, and the heart and lungs were normal.

At 7 P.M. of September 23, the patient had become noticeably worse since his admission to the hospital, and his condition appeared to be very critical. The typhoidal state was rapidly increasing, and meningitis symptoms were now marked. The eye grounds of both eyes showed marked choked discs; the rigidity of the neck had increased, and the pulse was only 40. The patient was comatose, but it was still possible to rouse him.

By 10 P.M. an immediate emergency operation for septic cerebro-spinal meningitis had become necessary. The operative field was prepared with tincture of iodine, and chloroform administered as the anesthetic. Then a curved incision was made, starting above and about one inch in front of the left ear, and extending backward to the tip of the mastoid. The muscles were cut, exposing the bone; part of the posterior and superior canal wall and roof of the tympanic cavity was removed, and also a part of the squamous portion for an area of about one and one-half inches in diameter. The sigmoid sinus was exposed posteriorly and opened; no thrombus was found, and the sinus wound was packed. A few granulations were found on the dura mater just above the tympanic cavity, while the dura mater itself showed board-like tension in the middle fossa, so an incision was made in the dura mater, immediately to relieve intracranial pressure, and for local drainage, whereupon the pulse-rate increased at once and improved somewhat in quality. A double pectoral saline epidermiclysis of 1200 c.c. was given. Wet dressings were applied to the wound, and soon afterward, a saline proctoclysis was given to the patient, and was repeated at intervals of three hours. Much fluid, chiefly isotonic saline solution, was administered by the mouth. The patient passed from the anesthetic into a comfortable sleep without rousing. An examination of smear of ear pus showed pneumococci, and of the mastoid pus, streptococci.

2nd Day. On the following morning the patient's mental condition was bright; he showed no discomfort, and was both hungry and talkative. A watch was heard in his left ear 1/60. A cerebral hernia protruded about half an inch, and the cerebrospinal fluid drained freely. Proctoclyses were continued, and the patient drank a great deal of milk, of water, and magnesium sulphate solution. The patient was urged to drink as much as possible magnesium sulphate well diluted.

4th Day. On the fourth day, the dressings were found to be contaminated by pyocyanous infection, and the cerebral hernia showed incipient necrosis. The wound was wiped with bichloride of mercury solution, dusted with chinisol, and a saline wet dressing applied. The enemata were continued, as was also the internal use of the magnesium sulphate solution.

5th Day. On the fifth day, the wound was clean and sweet.

7th Day. On the seventh day, *all symptoms of the meningitis had entirely disappeared*, and the patient's mentality was very keen. A mild degree of facial paralysis on the left side was noted. There was a little cerebrospinal leakage, and the wound was slightly purulent; therefore it was wiped with corrosive sublimate solution, and dressed with aluminum and lead acetate wet dressing. The patient continued to drink much magnesium sulphate solution.

8th Day. On the eighth day, the wound having become suspiciously dry, gas and ether were administered, and the mastoid operation was thoroughly completed. Then the sinus packing was removed and an alcohol wet dressing applied. The smear from the mastoid wound was found to contain streptococci.

12th Day. On the twelfth day, the patient was up and dressed, felt very well, and had begun to recover his appetite. He drank a large quantity of magnesium sulphate. The wound had granulated well, and was narrowing, though there was still some slough adherent.

13th Day. On the thirteenth day, the cerebral hernia had decreased very much, but the deeper layers of the wound were suppurating, the pus containing streptococci. An alcohol wet dressing was applied. Although the patient had a good color and appeared very well, except for the unhealed wound, he complained of double vision—due to in-

FIG. 1.—Hernia on 13th day.

sufficiency of the left external rectus—and the left facial paralysis seemed more marked. He continued to take much magnesium sulphate through the mouth. The blood count on this day was as follows: Red corpuscles, 4,900,000; white corpuscles, 18,000; differential count, small mononuclear cells 20.8%, large mononuclear cells 1.6%, transition cells 2.8%, polynuclear cells 75%.

27th Day. On the twenty-seventh day, there was a sudden rise in the patient's temperature,

he had a severe headache, and vomited a great deal. The facial paralysis was worse, and the left eye, which closed the day before, now would not quite close, and the same eye had a slightly choked disc. All over the wound was a membranous exudate. The lumbar puncture produced a turbid fluid under moderate pressure, containing pus cells, but no organism by cultures. Saline enemata were administered to the patient every two hours, and an increased amount of water, and two ounces of magnesium sulphate were given him through the mouth, but he could retain nothing, and his nutrition was poor.

29th Day. On the twenty-ninth day, the patient's general condition was much better. An aluminum and lead acetate dressing was applied to the wound, and the patient was given one-half ounce of magnesium sulphate during the day.

FIG. 2.—Diagram of wound on 29th day.

41st Day. On the forty-first day, the patient was doing well. The hernia had disappeared, and the wound was clean.

FIG. 3.—Diagram of wound on 41st day.

43rd Day. On the forty-third day, the wound was still smaller, but the patient had an epileptiform convulsion with an aura of "whizzing in the head like taking an anesthetic." He continued to drink magnesium sulphate well diluted, consuming one-half an ounce during the day.

44th Day. On the forty-fourth day, the patient felt very well. The wound was almost dry, but a

microscopic examination of the discharge showed considerable pus and an occasional coccus.

50th Day. On the fiftieth day the patient did not feel so well. The wound was suppurating, and the lower jaw was drawn strongly to the right, to a distance equal to the width of two incisor teeth, by the contraction of the right, and paresis of the left, masticatory muscles. One dram of magnesium sulphate was administered to the patient three times during the day.

61st Day. On the sixty-first day, the patient experienced a second epileptiform convulsion, which was, however, shorter than the previous one. The tension in the wound had increased.

62nd Day. On the sixty-second day, the wound had contracted, and looked completely healed, except for considerable cerebrospinal drainage. Amidoazotolulol salve was used as a dressing. The patient was given one dram of magnesium sulphate three times during the day.

68th Day. On the sixty-eighth day, the epidermitization was complete. One-half an ounce of magnesium sulphate was taken internally by the patient.

72nd Day. On the seventy-second day, the patient was seized with a third epileptiform convulsion, which was, however, slight. The patient said that this time an aura of color appeared before his right eye only, whereas in the last convulsion it had appeared before both eyes. The discs of both eyes were choked, more markedly so in the left. The left pupil was much larger than the right.

76th Day. On the seventy-sixth day, the wound surface was necrosing, and the cerebrospinal fluid oozing considerably. The patient was pale and thin; he no longer cared to help about the ward as he had done hitherto, and could not even read without fatigue. He was aphasic for nouns—a condition which lasted one day only—and was also very deaf, suggesting word deafness. Half an ounce of magnesium sulphate was given him during the day.

79th Day. On the seventy-ninth day, the hernia was larger, and had taken on the appearance of a malignant tumor with erosions on its surface and invading the neighboring skin flaps. There was a leakage of cerebrospinal fluid with a little pus. The wound was wiped with mercuric chloride in alcohol.

FIG. 4.—Hernia on the 82nd day.

82nd Day. On the eighty-second day, the wound was nearly epidermitized, and though there was copious cerebrospinal leakage, there was very little

pus. The patient, however, felt severe pain in the wound and down his neck. He was given two doses of magnesium sulphate, half an ounce at one time, two ounces at the other.

98th Day. On the ninety-eighth day, the patient's left facial paralysis was total, he had a severe headache, experienced intensely loud tinnitus and flashes before his eyes at the same time, and at night felt faint. There was some serum and blood from the wound, but no pus. The hernia had increased 25% since the day before, and there was much serous leaking. A specimen of the tumor for histological examination proved to be only granulation tissue. The patient was given one dram of magnesium sulphate.

101st Day. On the one hundred and first day, the hernia was large, and sloughing, with a cadaveric odor, and was in appearance a malignant granuloma; induration reached from the outer angle of the left eye to the lower wall of the meatus, with nodules below the ear posteriorly in the neck. The granuloma was invading the healthy tissues and the skin, and no healthy granulations were visible. The lumbar puncture produced 33 c.c. turbid, flocculent, stringy cerebrospinal fluid under great pressure. There were many polynuclear cells, but no germs in the smear, and the cultivation was negative. The jaws and face of the patient were much twisted to the right. He had edema of the right eyelid and had a severe paroxysm of pain in the left eye, and severe pains in the head. A tincture of iodine dressing was applied to the wound, from which there was free drainage. The patient was given two ounces of magnesium sulphate.

129th Day. On the one hundred and twenty-ninth day, the patient was *not* up and dressed, the first occasion in a very long time. The wound was dirty and foul.

145th Day. On the one hundred and forty-fifth day, the patient was weak, nauseated, complained of pain in both eyes, and was discouraged at last; he looked pale, sallow, and cachectic. The fungus hernia was large, although cleaner. The appearance of a malignant granuloma invading the skin was intensified, and much more tissue was involved than recently. Two drams of magnesium sulphate were administered to the patient every four hours.

152nd Day. On the one hundred and fifty-second day, the wound was clearing, and the patient was much better and more comfortable. His condition about this time varied considerably; one day he would show improvement, and the next he would be worse again. It was noted that he had seemed either inattentive or else very deaf for a week or two past.

162nd Day. On the one hundred and sixty-second day, the patient was weaker. From the time, *three weeks earlier*, when he had first been given alcohol to stimulate his appetite, he had lost more rapidly.

167th Day. On the one hundred and sixty-seventh day, the wound was green, and the granuloma very large. The patient was weak and indifferent, dozed all the time, seemed extremely deaf, and spoke very slowly at long intervals. For ten days past his speech had been growing unintelligible, like sensory aphasia, and inarticulate, like motor aphasia. His mind, however, was perfectly clear, although slow. He found no trouble in swallowing, but could retain little nourishment, as there was considerable vertigo, nausea, and vomiting. He also had a severe headache.

169th Day. On the one hundred and sixty-ninth day, the patient was better again. He began to pick up interest, and to talk, but though his words were, as usual, chosen correctly, his speech was almost unintelligible from faulty muscular action; in talking he did not move the muscles of his face or mouth at all, and scarcely moved his tongue. He was also very deaf. On the other hand, the left facial paralysis had been improving for several days, and he could now close his left eye tightly.

171st Day. On the one hundred and seventy-first day, the wound was very foul and green, with considerable cerebrospinal leakage. The external and internal recti muscles of the left eye were weak, paretic, and irregular in action, and the same eye showed marked strabismus, while both eyes had a spontaneous nystagmus to the right. On this day the patient ate nothing at all. He was in a very drowsy state, sleeping most of the time, though answering questions readily. This drowsiness had been gradually increasing for three weeks past.

173rd Day. On the one hundred and seventy-third day, the wound was dirty, the fungus granuloma extending over the edges of the wound on all sides, under the skin, and under the posterior half of the zygoma. The left auricle was pushed down to the angle of the jaw. There was noticeable rigidity of the neck. The patient was slightly comatose.

175th Day. On the one hundred and seventy-

fifth day, the patient left the hospital, and went home. He was comatose, but not profoundly so.

179th Day. On the one hundred and seventy-ninth day, the patient was reported to be better than on leaving the hospital.

186th Day. On the one hundred and eighty-sixth day, the patient was reported comfortable. His jaw now shuts tight and even. Facial movements perfectly restored.

190th Day. On the one hundred and ninetieth day—March 30, 1912—the patient died.

SUMMARY OF CASE.

Diagnosis, as cerebrospinal meningitis, established by symptoms and lumbar puncture.

Decompression operation gave immediate relief from intracranial pressure.

Toxemia combated by magnesium sulphate water and drainage.

Cure of the cerebrospinal meningitis follows in a few days. Infection of the cranial wound follows contamination of the dressings. Result, a recurrence of toxemia together with encephalitis, with death on the 190th day from time of decompression operation.

Cause of death, encephalitis and toxemia, not cerebrospinal meningitis.

FIG. 5.

FIG. 6.

FIG. 7.
FIGS. 5, 6 and 7.—Daily, morning and evening, maximum, minimum records.

THE MODERN TREATMENT OF AMEBIC DYSENTERY.

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AMEBIC dysentery has become endemic in the United States. Holt¹ states that "reports to the Surgeon-General of the Public Health Service show its presence in numerous localities in this country. It has been reported in California, Oregon, Washington, Idaho, Georgia, Arkansas, Indiana, Ohio, Massachusetts, Maryland, Pennsylvania, Michigan, Illinois, North Carolina, Texas, Alabama and New York. Reports of other observers indicate the presence of the disease in a number of other localities." In our island possessions it has been known to exist for years. Giffin² of the Mayo Clinic reported that during a period of two and one-half years the stools of 1700 patients were examined, in 79 of which the *Entamoeba histolytica* was demonstrated. In the 79 cases in which the entamoeba was demonstrated, the patients came from the following states: Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Wisconsin, and Montana. Only a very few of these patients had ever traveled in the South, and without doubt contracted the disease in their home locality. Jerome Wagner³ states that over one hundred cases have been seen at the New York Polyclinic Hospital in the last twelve years. From the above it is readily seen that amebic dysentery becomes a disease of importance to every practicing physician and the diagnosis and efficient treatment of this malady should be well known.

Many drugs have been used in the treatment of amebiasis, the chief among which are: ipecac, bismuth and quinin. Varied results have been obtained by different observers with each. The treatment was tedious, relapses and deaths were frequent, and on the whole no drug gave satisfactory results. In March, 1911, Vedder⁴ of the Army Medical Corps, published his experiments undertaken to test the efficacy of the ipe-

cac treatment in dysentery. These experiments brought emetin to light as the potent factor in the treatment of amebic dysentery. Rogers immediately began to treat all of his cases of dysentery (where the *entamoeba histolytica* was the causative organism) along the lines laid down by Vedder. The reports of the wonderful results obtained by Rogers in India are well known to all. While in North China in 1912 it was the writer's good fortune to have the opportunity to observe several cases of amebic dysentery that were being treated with emetin hydrochloride. The European physicians of that locality were loud in their praise of emetin, and it seemed no less than miraculous that patients who had the *entamoeba histolytica* demonstrated in their stools, should be up and about their work while receiving the treatment, have no uncomfortable symptoms from the drug, the stools return to normal frequency and consistency in three or four days, while the active amebas disappeared in a like period in a large percentage of the cases. In all, four cases were closely observed for a period of four months; all were acute cases and there was no relapse during this time. Frequent microscopical examinations of the stools were made, and in no case were active ameba found after treatment. In Manila, P. I., in 1913, through the courtesy of Captain A. T. Cooper and Lieut. E. A. Anderson of the Army Medical Department the writer was able to observe and compare the results that were obtained with bismuth subnitrate and emetin in the treatment of amebic dysentery. The acute cases under bismuth did poorly and the chronic ones went from bad to worse; and, in one instance, the disastrous results of the bismuth were clearly demonstrated at autopsy. It had coated the majority of the amebic ulcerations, and by so doing had bottled up the entamoebas, which had burrowed deeper into the intestinal wall and finally caused multiple perforations. The only ulcers that had perforated were those that had been sealed with a layer of bismuth. Bismuth will temporarily stop the pain in amebic dysentery by coating the ulcerations, thus preventing the passage of the intestinal contents over raw