of the other—this being limited as described in Cases 8 and 10.

I have known of the pia sending out trabeculae between fibers, splitting them up into bundles, each fiber having its own myelin sheath, but not a neurolemma as other nerves. A later report might demonstrate a distinct investment of the respective halves, but more likely the temporal side and not the nasal on account of anatomic developments.

One other explanation might account for the foregoing observation: the extension of the inflammatory process of the optic nerve might follow the nerve around on the side involved back of the chiasm, and in this manner cause complete destruction of the nasal half before they decussate, the choking of this part of the disk in the opposite eye taking place from that fact.

There of course is an excellent reason why the operation is of value in sarcoma and to a more limited extent in carcinoma. Our knowledge of metastasis is based on the morphology of these tumor masses, and we all know that the cells of the sarcoma variety make up the walls of the blood vessels, the cells themselves depending on this rich blood supply for their growth. When this is cut off, they necessarily shrink and cease to grow; whereas, in carcinoma, the blood vessels are not involved. The lymph channels remain and can easily carry off some of the infection to lymph nodes elsewhere, extending the progress regardless of the blood supply.

My observation has been that a distinct deterring influence is exerted in the carcinomatous growth, but that is the best that can be said. On the other hand, in sarcoma, your result can in a way be measured by the completeness of your operation in tying off and destroying all of the branches so that anastomoses will be controlled, whatever the cause of malignancy; the lack of nourishment influences the growth.

The technic of the operation as well as the things to avoid while operating will interest you only when a case presents itself. This information you can find without difficulty.

ABSTRACT OF DISCUSSION

DR. C. G. SAVAGE, Nashville: The subject presented by Dr. Cary is worthy of our deepest consideration. I have never had any ligations done.

One case I recall especially because of a second recurrence in a strange location. The cancer involved primarily the lower right lid, but later involved the right eye also. My first operation removed the entire lid and the globe. There was a recurrence in the orbit a few months later. In the second operation I removed the entire orbital contents. Without further manifestations in the orbit, a tumor formed on the corresponding side of the neck just below the ear, which was evidently malignant. It seemed to me that the man was doomed. I do not like to operate below the chin line, so I had one of our surgeons operate for the last malignant growth. The operation was done very thoroughly, the wound was left open and Roentgen-ray treatment instituted. Afterward I saw the patient frequently and I think I can safely say that at least a year after the operation there had been no recurrence. At that time the man was rejoicing because we had told him we could give him only temporary relief. The presentation of this subject ought to have a tendency to further nullify the recurrence of such tumors.

DR. E. H. CARY, Dallas, Tex.: A question has been asked concerning a point which I did not bring out in the paper for the sake of brevity. In carcinomatous growths ligation could only effect a retardation of the growth. You really do not check it as much as you want to check it and the operation is not a success in carcinomatous growth. If there was some

plan by which the lymphatic channels could be found and cut off, I think you could find a method of cutting off the spread of carcinomatous growth. In carcinomatous growth it is true that best results can be obtained if you can tie and cut off all the branches on each side and not disturb the main growth at all. One case of sarcoma involving the inferior maxillae, without much traumatism, I recall. This sarcoma receded and the woman has been teaching school for three years. I began operating with the idea of removing the growth, but when I saw it I knew it would remove almost the entire chin, so I proceeded as mentioned.

INTRATHECAL INTRACRANIAL INJECTION OF AUTONEOSALVARSANIZED SERUM FOR SYPHILITIC HEADACHE *

ALFRED GORDON, M.D.

PHILADELPHIA

Among the various methods devised for the use of salvarsan or neosalvarsan in the management of cases with involvement of the nervous system caused by recent or old syphilitic infection, the autosalvarsanized serum method appears to be the most successful. Such seems to be the view held by the majority of observers who are familiar with the subject. My experience in almost a hundred cases of syphilitic and parasymphilitic affections of the cerebrospinal axis is entirely in accord with that of others. Comparing this method with the intramuscular and intravenous, the results obtained are by far superior to those in the two latter procedures. The reason of it has been emphasized by Swift and Ellis, the originators of the method, and has been sustained by subsequent observers. Indeed the statement is a logical one that by subarachnoid injections a spirocheticidal substance is brought into direct contact and immediate relation with the nervous tissue and the spinal fluid, and consequently with the etiologic agent disseminated in both.

The introduction of salvarsanized serum may be accomplished in two ways: either intraspinal or intracranial. The intracranial method has been applied chiefly in cases of paresis, as it has been shown by a number of writers that only slight beneficial effect, or no effect at all, resulted from the intraspinal injections in this particular affection so far as mental symptoms are concerned, although some improvement has been obtained in the condition of the cerebrospinal fluid, particularly with reference to the cell count. In my experience with twenty-seven paretics, amelioration in the mental manifestations was observed in ten patients. Nevertheless, if a comparison is drawn between the syphilitic affections in which the brain symptoms predominate and those in which the cord symptoms are the most conspicuous, I may say that the autosalvarsanized serum, introduced through lumbar puncture, has given me, speaking generally, more favorable results in the latter than in the former cases.

It is therefore logical to presume, at least, that the circulation of the cerebrospinal fluid is such that it is not capable of transmitting the intraspinal injected specific remedy in an upward direction toward the upper portion of the cerebrospinal axis. At this juncture it is interesting to take notice of the important experimental work done with the object of verifying the above clinical observation.

* From the Neurological Department of Mount Sinai Hospital.

Harry Campbell¹ gives the following account of experimental work in the *British Medical Journal*:

If trypan blue be injected through a trephine hole into the cranial subarachnoid space above the tentorium cerebelli, not only the cortex cerebri, but the entire cerebrospinal axis is found, postmortem, to be stained. If, on the other hand, the pigment be injected into the spinal subarachnoid space by means of a lumbar puncture, the cortex cerebri remains unstained, the staining in these cases being confined to the spinal cord and brain stem. It would appear that the cerebrospinal fluid flows from the cranium spinalward—probably a meager current—and also that some slight ebb and flow takes place between the fluid in the subarachnoid space at the base of the cranium and the spinal subarachnoid space, in accordance with variations in the quantity of intracranial blood.

More recently, William C. Woolsey² repeated Campbell's experiments with trypan blue and arrived at the same conclusion, namely, that when administered intraspinally its diffusion to the cranial cavity is less intense than in the cord. He could see that the meninges of the cord were stained a deep blue up to the level of the cervical enlargement from which point, by gradual gradations, the intensity of the color diminished to the foramen magnum. The periphery of the cord itself just under the pia was stained a distinct blue for a distance of from 0.5 to 1 mm. below the surface. No such invasion of the brain above the medulla could be distinguished.

Wardner³ and Martland have made postmortem injections of carbofuchsin into the spinal subarachnoid space on several cadavers. In no case, they say, even with the bodies placed head down and in almost erect position, has any staining of the structures beyond the posterior fossa been observed.

All these facts throw considerable light on the subject and explain fully the comparative failure in treatment of paresis or other syphilitic affections of the brain by the exclusive intraspinal introduction of salvarsanized serum.

The direct intracranial method has at this time quite a number of advocates. Levaditi, Marie and Martel, Neisser and Pollac, Marinesco and Minea, Berriell, Balance and Campbell are the earlier writers who almost simultaneously utilized salvarsanized serum for intracranial injections. All of them observed favorable results. Wardner, in a recent contribution,³ reports six cases which he treated in collaboration with Martland, Eagleton and Beling by the intracranial method, from which he obtained some encouraging effect.

That the introduction of autosalvarsanized serum into the subdural space of the cranium may be a method *par excellence* in some select cases in which cerebral symptoms predominate; that the previously mentioned experimental work with regard to the current of the cerebrospinal fluid which is directed from the cranium spinalward, but not vice versa—both facts find their striking corroboration in the events of the following case, which seems to possess all the characteristics of a carefully carried out laboratory experiment.

J. K., tailor, aged 40, contracted syphilis at the age of 25. About two years ago he commenced to have pain in the upper cervical region. At first nocturnal, the pain gradually

became continuous. The patient relates that the several physicians whom he consulted at first all agreed that in view of the history of syphilitic infection it was advisable to administer salvarsan, to which the patient consented.

The slight effect produced by the first injection necessitated repetition of the treatment and he received five injections, all intravenously. As the headache continued with greater severity, his last physician, Dr. Bellak, referred him to my service in the Mount Sinai Hospital. On examination the following condition was found. He suffered intense pain in the entire cervical and upper dorsal regions but especially in the occipital region and over the vertex on the left side. The pain was so severe that for nights he could not sleep. He was unable to eat, lost his appetite and began to lose in weight.

Physical examination showed: slight Romberg sign, markedly increased patellar tendon reflexes, but no other abnormal reflexes. He had frequent and sometimes imperative micturition and defecation. There was complete loss of sexual power. There were no changes in the objective sensibility. The mentality was fairly good.

The eye examination by Dr. LeFever showed a double primary optic atrophy well advanced; no response to light in either eye; accommodation and convergence were diminished; the visual fields symmetrically contracted; pupils unequal: right, 2.5 mm.; left, 3 mm.

A Wassermann test made on admission to the hospital by the pathologist, Dr. Rubenstone, proved to be strongly positive in the serum and spinal fluid.

Urinalysis showed traces of albumin. The thoracic and abdominal viscera were normal. The diagnosis was made of cerebrospinal syphilis.

In view of the previous intravenous injections of salvarsan which, according to his physician, gave no results, the intraspinal injections of autoneosalvarsanized serum were undertaken. The patient was given, intravenously, 0.9 gm. of neosalvarsan. About thirty minutes later 50 c.c. of blood were drawn from the median basilic vein. The blood was set aside for clotting and then centrifuged. It was then heated to 56 C. (132.8 F.) for half an hour and placed in the ice box over night. The next day the serum was diluted with a normal solution in freshly distilled water to make in all 30 c.c. A lumbar puncture was immediately made, 30 c.c. of spinal fluid were withdrawn and replaced by the 30 c.c. of the neosalvarsanized serum.

On the day following the treatment the pain in the head and in the neck was slightly improved, but very soon the same suffering returned. The condition of the sphincters began to improve rapidly; the tendon reflexes became less prompt. As the patient's suffering was unusually severe and he could not sleep, two weeks later another identical treatment was given and again without any effect on the headache. The withdrawn spinal fluid showed still a strongly positive Wassermann reaction and increased albumin content.

During a period of twenty-one weeks the patient received seven intraspinal injections of autoneosalvarsanized serum at two and three weeks' intervals. With the exception of the first, for each of the six other injections, 0.6 gm. of neosalvarsan was used. The Wassermann reaction remained positive. While the symptoms referable to the spinal cord have all disappeared, and the pain in the neck, probably due to a syphilitic cervical pachymeningitis, has greatly improved, nevertheless the headache remained unaltered in severity. It was particularly intense in the left parietal area. The insomnia was exhausting to the patient. The eyes were repeatedly examined and found in the same condition.

As the patient persistently pointed to the left parietal region as the seat of the intense pain, the thought occurred to me that we may deal here with a localized syphilitic thickening of the skull. He had been given, symptomatically, all coal-tar preparations, sedatives, mercurials and iodids, and there was no relief from the excruciating headache.

A decompressive operation was proposed to the patient and he promptly accepted it. Dr. N. Ginzburg removed a large flap of bone over the left parietal region. The skull was

1. Campbell, Harry: Brit. Med. Jour., March 14, 1914, p. 577.

2. Woolsey, W. C.: Experimental Subarachnoid Injections of Trypan Blue, Jour. Nerv. and Ment. Dis., July, 1915, p. 477.

3. Wardner, Drew M.: A Report of Five Cases of the Intracranial Injection of Auto-Sero-Salvarsan, Am. Jour. Insan., 1915, lxxi, 459.

found decidedly thick. The membranes were seen covered with light gray patches of the size of a ten-cent piece, four in number, and quite a large number of very small patches irregularly distributed. The dura was not opened.

On the day following the operation the patient felt some relief from the headache, but twenty-four hours later the pain returned with the usual severity. The wound healed up very promptly. The patient kept on suffering for the following two weeks. Insomnia, and anorexia were pronounced.

It was evident to me, in view of the fact that the cord symptoms were controlled by the intrathecal spinal injections of autoneosalvarsanized serum, that the latter did not reach the subarachnoid space of the cerebrum. Campbell's remarks¹ regarding the experimental work on the spinalward current of the cerebrospinal fluid appeared to me strongly applicable to the present case. An excellent opportunity presented itself here for injecting the cranial subarachnoid space. Accordingly the patient was given an intravenous injection of 0.6 gm. of neosalvarsan and serum was prepared by the pathologist in the adopted manner for the following day.

The patient was etherized; a lumbar puncture made, 30 c.c. of spinal fluid were withdrawn. The wound of the skull was reopened and 30 c.c. of the neosalvarsanized serum were injected carefully under the dura in close proximity to the large gray patches. On the day following the operation the patient began to feel better. The headache gradually subsided. He commenced to sleep at night, the appetite improved rapidly. The scalp wound healed up in ten days. The patient left the hospital two weeks later totally free from pain. He began to gain in weight and felt happy. Since then he has reported to the out-patient department regularly every week for a period of four months. No recurrence of pain has been observed. While the patient's general condition is, at present, normal, the condition of the eyes remains unaltered.

The present case appears to be of great importance from a therapeutic standpoint, also because of a clinical corroboration of the physiology of the movement of the cerebrospinal fluid.

The fact that seven injections of neosalvarsanized serum into the spinal subarachnoid space relieved and finally removed the cord symptoms alone and brought no relief whatever to the intracranial manifestations, points logically to a strict parallelism between this clinical observation and the experimental observation with trypan blue previously mentioned.

It is evident that had a good upward flow existed in the cerebrospinal fluid, the large amount of neosalvarsan injected in the spinal intrathecal space would have carried its spirillicidal effect to the neurons of the cortex cerebri. The rapid and remarkable effect produced on the brain tissue by direct contact with neosalvarsanized serum is undoubtedly equal if not superior to a direct laboratory experiment carried out with mathematical precision. My patient will perhaps require repeated intracranial injections, but the result obtained so far points strongly to the intracranial route as being the only one to be adopted in cases with conspicuous and persistent cerebral manifestations.

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Paranoïds and Brilliancy.—The paranoïds are often supposed by an innocent public to be brilliant because they are frequently fluent talkers, plausible, and full of pseudologic, and the world, especially today, is prone to worship the god of verbosity. If I were breeding people as we breed horses, no man with a gift of gab, a different quality than gift of speech, would be permitted to come into my experiment station.—Charles W. Burr, M.D.

SPONTANEOUS EVOLUTION OF A TRANSVERSE PRESENTATION

WITH REPORT OF A CASE *

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A transverse presentation, if unaided by art, may have five possible terminations: 1. Impaction, with excessive retraction of the upper uterine fibers, rupture and death of mother and fetus from hemorrhage or exhaustion. This is by far the most common outcome of neglected shoulder presentations. 2. Spontaneous birth by a doubled body, the condition termed "evolutio conduplicato corporis" by Roderer, in which the head and thorax are jammed tightly into each other and are born together. 3. Spontaneous rectification, that is, under exceptional conditions the lower fetal pole may be pushed downward and finally become the presenting part. 4. Spontaneous version, in which, as the result of excessive unilateral contractions of the uterus, the upper fetal pole is pushed downward and actually presents at the vulva. 5. Spontaneous evolution, as described by Douglas of Dublin. In this favorable termination, the presentation remains unchanged, but the trunk and buttocks, impelled by powerful contractions, roll past the shoulder and extrude from the vulva before the presenting shoulder.

It was my good fortune to attend a case of labor with transverse presentation, which terminated with the interesting phenomena of this last form of natural delivery. Inasmuch as Prof. J. W. Williams of the Johns Hopkins University cites in his treatise but one instance of such an occurrence in his varied and extensive obstetric experience, the report of this case must prove at least of statistical value.

Mrs. B., a stocky young primipara, aged 20, height 4 feet 10 inches, weight 140 pounds, was admitted into the maternity ward of the Newark Beth Israel Hospital, July 12, at 5 a. m. in advancing labor. Her pelvimetric measurements were those of a slightly justomajor pelvis; interspinous 27, intercrural 30 and external conjugate 22 cm. The junior intern, Dr. Hirsch, examined her on admission and found the os dilated 4 fingers, but because of a tense and bulging bag of waters, he alleges, he was unable to make out the exact presentation; he could find no fetal heart sounds. At 7:30 the bag ruptured and the right arm prolapsed as also some coils of cord, which had no pulsation. He at once summoned me to the case. The diagnosis was apparently a left scapulo-anterior, so I ordered ether anesthesia in expectation of doing a version or decapitation if I found the former measure too hazardous. I might add that the patient was having terrific bearing-down pains.

Before she was fully under the anesthetic, to my great surprise, I observed the shoulder rotate forward under the pubic arch, sink downward and become visible at the vulva. With the next pain, which was unusually violent, the dorsum, laterally bent, appeared, then the buttocks, legs, posterior shoulder and arm. The head still remained in the pelvis: tilting the trunk toward the abdomen of the mother and making moderate traction effectually liberated it.

The fetus had some noteworthy characteristics; it was the size found in an 8-months' pregnancy and weighed 5½ pounds; it showed signs of commencing maceration, as evidenced by peeling of the skin, in several small areas; the neck was peculiarly elongated so that it had a diameter of 1½ inches; the head was of conical shape and terminated

* Presented before the Clinical Society of the Beth Israel Hospital, July 27, 1915.