

TWO ATTACKS OF TEMPORARY HEMIPLEGIA OCCURRING IN
THE SAME INDIVIDUAL AS THE RESULT OF THE USE
OF PEROXIDE OF HYDROGEN IN A SACCULATED
EMPYEMA (PLEURAL).

BY E. G. JANEWAY, M.D.,
NEW YORK.

THE following history of the development of two attacks of hemiplegia of temporary duration as the result of the use of peroxide of hydrogen in the sac of an empyema will, I trust, prove of interest as well as serve as warning :

Mr. B., forty-one years of age, a right-handed writer, was referred to me by Dr. Axtelle, of Waterbury, Conn. Two years previously he had developed a pleurisy on the left side, which had been aspirated. One and one-half years after this event a swelling developed in the left lumbar region, which bulged when he coughed. This Dr. Axtelle had incised four months preceding his visit to me, and found that it communicated with a sacculated empyema at the base of the left lung. After this the patient had used peroxide of hydrogen to irrigate the sac. On November 25th, three and a half months after the operation, two minutes after the injection of a wineglassful of the peroxide, as he noticed it to bubble inside, he felt very queer and, according to his wife, became unconscious for a second, and of a pale-greenish color. Immediately he found that his right arm and leg were numb and powerless. He did not lose the power of speech. This loss of power of the right arm, which was complete, and of the right leg, which was almost so, lasted for twenty-five minutes, and then passed away completely. After this he described himself as having felt as well as ever, except that he had been frightened by the occurrence.

Three days after this first attack he had an exactly similar seizure, except that he lost power in his neck also, his head dropped, and he had difficulty in breathing. The paralysis of the right arm and leg was again complete, and lasted as before—twenty-five minutes. On questioning, the fact was elicited that the sinus had so far closed that no air or fluid escaped after the introduction of the peroxide.

I examined Mr. B. sixteen days after the first of these spells. He then presented the healing incision and sinus in the left lumbar region. The physical signs on the left side were few and only to be made out by careful examination. There was some dullness in the lower part of the thorax ; on auscultation the respiratory murmur was feebler than on the right side. Only by the ear could adventitious sounds be heard over the above-described area near the vertebral column. Neither with the binaural stethoscope nor with the phonendoscope could they be elicited. These consisted in rather large liquid râles occurring during the act of coughing or during an inspiration following several short acts of coughing.

This is an illustration, to digress for a moment, of the fact of not infrequent occurrence, that those who trust alone to auscultation by

means of stethoscopes are liable to overlook or miss those indications of disease which are produced beneath the layer of normal, or nearly normal, lung tissue. On many occasions I have been able to detect a central pneumonia earlier by immediate than by mediate auscultation.

But to return to the thread of our story. At the time of the second examination, six days after the first, these phenomena had disappeared; only the slight dulness and the feeble respiratory murmur remained. On the occasion of this second visit the patient said that the discharge had ceased, and he felt that there was no accumulation within.

In this connection it may be of interest to recall to the members the case published by Leudet. This will be found with other cases of nervous phenomena developed in the course of an empyema, or more especially of lavage of the sac of an empyema, in the work of L. Bonveret on empyema, published in Paris in 1888. He has collected a series of cases which he has grouped under the head of embolic, slow paralytic, syncopal, and convulsive, following empyema, or more especially lavage of the sac, or the introduction of a tube in the sinus. This and the following are similar in most respects to the one whose history I have detailed.

Briefly, the facts of this case were: that a young man, twenty-one years of age, had a pleurisy of the left side, filling the pleural sac in ten days. At the end of a week two litres of serum were removed by thoracocentesis. Three days later a pleuro-bronchial fistula gave exit to a great quantity of pus. Four days after this a new thoracocentesis gave exit to a litre of cloudy and opaque liquid. At the end of four months an incision into the pleura was made and the sac was regularly washed with a solution of iodine. Gradually the sac diminished, and on several occasions it was necessary to dilate the fistulous tract. Thirteen months after the operation for empyema, while his mother, as she had been accustomed for a long time, washed the sac with a solution of iodine, having first introduced a new tube for one which had long remained in the fistula, the young man was suddenly seized with a general malaise, a sensation of numbness in the right side of the body, and an impossibility of speaking. The consciousness was not lost, and there was no convulsive movement. He knew that he could neither move a finger nor limb of the right side. Gradually the power of motion returned. Two months later a similar attack, though lighter, occurred. A third happened when the physician was himself washing out the cavity, which had become so retracted that it would hardly hold two-thirds of a wineglass of liquid. The physician essayed to measure the size of the sac by pouring in water. A resistance was experienced, and the tube was pushed out by the liquid. The patient rose, staggered, and his speech became embarrassed. He was placed in a horizontal position, with a pale face, the right hand and leg paralyzed, without power of speech. After fifteen minutes the speech returned, and a few moments later the power of movement of the right side. After this irrigations were continued for a year without further nervous accident.

So also this case, which was reported by Dr. L. Forgues, surgeon in the French Army, in the *Archives de Médecine et Pharmacie Militaires*, Paris, 1894, vol. xxiv., has somewhat similar features :

A soldier, twenty-two years of age, was admitted to the hospital, December 5, 1891, with broncho-pneumonia. Seven weeks later the beginning of pleurisy is noted, and twenty days afterward 700 grammes of pus were removed by aspiration. The operation for empyema of the left side after two days gave exit to 1300 grammes of pus. Daily lavage of the sac was performed at first, but afterward according to the requirements of the case. About three months after the operation, during the giving of a lavage, the surgeon being engaged in retaining the drainage-tube, which was very short and had given pain by pressure on the border of the wound, the patient suddenly lost consciousness, having a pale face, a cadaveric look, largely open eyes, and dilated pupils. The heart-beat and the respiration were suspended and the general sensibility was abolished. No convulsions nor contractions occurred. After the use of cold flagellation the heart's action and the respiration returned in about a minute. The patient had a vague expression for some moments, then recognized people around him, but had no knowledge of what had occurred. Four or five minutes later it was found that the right arm and leg were paralyzed. After twenty-five minutes power returned in the right leg, but it was three hours before the right arm could be used. Lavage was abandoned after this. On two occasions in the subsequent history the fistulous tract closed, but owing to accumulation of pus in the sac had to be reopened. The man finally recovered without another paralytic attack. In this case, as in the one which I have brought to your notice, though the hemiplegia was on the right side, there was no aphasia.

For attacks such as the three to which your attention has been drawn the most natural explanation would be to suppose that something had passed into the circulation and had produced an anæmia of the left side of the brain, or, more properly speaking, of a portion of this area. If we extend the study, however, and include those cases in which convulsions have also occurred, these have in certain cases been considered to be dependent on embolism, but a difficulty has been encountered in the cases which terminated fatally, and after careful search no satisfactory evidence of embolism has been found at the autopsy.

So far as a rather hasty examination of the literature is concerned, the three cases here recited are the only ones obtainable in which collapse and temporary hemiplegia have been the sole phenomena. In view of the fact above mentioned, that embolism could not be proven, the theory has been advanced that such seizures as had collapsed with subsequent convulsive attacks—the pleuritic epilepsy of some writers—could best be explained by invoking reflex action, and by supposing that a contraction of the cerebral arteries or an inhibition or excitation of the cerebral cortex was the occasion of the untoward nervous phenomena, with the additional explanation that in cases in which paral-

ysis existed afterward hemorrhages had occurred. But such explanation will not avail for the three cases here narrated—hemiplegia following or, more rightly, associated with collapse. It is a little singular that in these three cases, all with right hemiplegia, only one had aphasia. Hence, under the reflex theory, a narrower area of arterial spasm or cerebral inhibition must have been involved in two cases than in the case of Leudet. The idea which has been formulated, that intoxication is responsible for such conditions, would not be tenable so far as peroxide is concerned, nor does a study of the others enable one to be satisfied with such a theory.

To my mind, the phenomena are best explained by supposing the hemiplegia to be due to an embolism, but of such a nature as to soon disappear. The only substance capable of thus acting would be either air or gas. In the case which I have narrated, as in the others, the attack has occurred when the conditions were such as to produce some pressure within the sac; by liberation of oxygen from peroxide in this case; by measuring size of sac, Leudet, once; by change of tube with lavage, Leudet, once, and, case of Dr. Forgues, of pressure to hold tube in place with lavage. The question which has occurred to me is, Do not the events point toward the possibility that under the conditions air or gas may have found entrance into the radicals of the pulmonary veins through stretched or torn granulation tissue, helped by a forcible inspiration at the time of the accident? Air embolism barely possible, oxygen embolism may be the solution which we seek to explain these cases. Oxygen could only be the agent when peroxide had been used, as in the case recorded. It can, of course, be objected that air, and more particularly oxygen, would either be rapidly absorbed or else kill by its accumulation in the heart. We are, however, concerned in these cases about too small an amount to bring about the latter result. It may be well to remind the adherents of the reflex theory that in the case recorded by Leudet the lavage was continued for a year after the last attack without recurrence. We may well ask what has become of the sensitive nerve so susceptible in provoking reflex.

As regards collapse alone, it is possible that it can be produced as the result of a reflex influence. It seems to me that a careful examination of the history of certain convulsive cases, especially those followed by, or rather associated with, hemiplegia or paralysis, strongly suggests something sent by the circulation to the brain, possibly some of the injection fluid or pleural contents by the aspiration influence, causing capillary embolism.

Shortly after meeting this case I found an article by Prof. Lewin in the fortieth volume of the *Archiv für experimental Pathologie und Pharmacologie*, entitled, "About the Penetration of Air from the Bladder into the Heart and the Path of its Passage."

Prof. Lewin, in this article, describes experiments on animals in which death was produced by injecting air into the urinary bladder, thus producing air emboli. The air entered the venous system through the pelvis of the kidney, and was observed in the vena cava and aorta by means of a laparotomy previously performed. The air could also be heard to enter the renal vein and be made out in the heart during its continued activity following the death of the animal. Prof. Lewin thinks that the air penetrates preferably by the lymphatics into the vein by preformed paths, not necessarily through torn openings.

Such a case is suggestive in connection with the theory which has occupied us.

GASTRIC SYPHILIS, WITH THE REPORT OF A CASE OF PERFORATING SYPHILITIC ULCER OF THE STOMACH.

BY SIMON FLEXNER, M.D.,
OF BALTIMORE.

(From the Pathological Laboratory of the Johns Hopkins University and Hospital.)

CHIARI opens his paper on "Gastric Syphilis," contributed to Virchow's *Festschrift* in 1891, with the following remarks: "Although we are to-day sufficiently informed of the pathological changes caused by syphilis in most of the organs of the human body, and, thanks to the famous investigations of Virchow, we are able, in spite of our ignorance of the specific syphilitic virus, to identify the anatomical lesions of the disease, yet there are a few organs respecting which our knowledge of their syphilitic affections is not at all complete. To these latter organs belongs the stomach."

Chiari,¹ in his critical review of the reported cases of syphilis of the stomach up to the time of his publication, accepts as conclusive only those of Klebs, Cornil and Ranvier, Weichselbaum, and Birch-Hirschfeld. I shall follow Chiari in accepting these and rejecting the other reported instances, with the exception of Wagner's case, and I shall find in the meagre literature of the subject, especially in the English language, justification for the publication of the report of the present instance.

The case reported by Klebs² occurred in a man who showed at the autopsy, besides an ulcer of the stomach, numerous ulcers and cicatrices of the skin, fresh ulcers of the pharynx, gummata of the lungs and liver, and ulcerating gummata of the intestine. He describes the gastric lesion somewhat as follows: The ulcer was situated on the pos-

¹ Ueber Magensyphilis. *Festschrift*, Rudolph Virchow, 1891, ii. 297.

² *Handbuch der pathologischen Anatomie*, 1869, i. 269.