

The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees.

VOLUME LI

CHICAGO, ILLINOIS, DECEMBER 19, 1908

NUMBER 25

Original Articles

THE DURATION OF LIFE AFTER EXTENSIVE HEMORRHAGE OF THE BRAIN.*

WILLIAM G. SPILLER, M.D.

Professor of Neuropathology and Associate Professor of Neurology
in the University of Pennsylvania.

PHILADELPHIA.

My attention has been called recently to a diagnosis of apoplexy in a case in which life terminated in about five or ten minutes after a severe attack began. The person, a woman, had been in good health previously, was nearly 70 years of age, and after retiring was heard to groan. She was found within a few minutes with her head hanging over a bath-tub and her face much congested. A physician, called at once, pronounced her dead and gave apoplexy as the cause of death.

My experience has not justified a diagnosis of apoplexy in cases in which life has been terminated so quickly. I have taken thirteen specimens from my collection of pathologic conditions, in which extensive hemorrhage of the brain was found at necropsy. Many of these were from cases in my service at different hospitals; others were from cases in the service of Dr. Mills. In all instances life had been prolonged at least hours after the onset of the apoplexy, even when the hemorrhage was very extensive, had broken into the ventricles, and filled all the ventricles, even the fourth. In two cases of this kind (1 and 2) life was prolonged several hours; in one about five hours, in the other eighteen to twenty hours.

As a rule extensive rupture into the lateral ventricles is followed by more rapid death than when the ventricles escape, but a moderate hemorrhagic exudate into the ventricles is not necessarily rapidly fatal. In nine cases (3, 4, 5, 6, 7, 8, 9, 10 and 11) the lateral ventricles were implicated. In Case 3 death occurred after three days; in Case 4 after eleven days; in Case 5 after at least five days; in Case 6 after at least twenty-four hours; in Case 7 after five or six days; in Case 8 after about five days; in Case 9 after about a day and a half; in Case 10 after sixteen days; in Case 11 after about two days.

Case 10 is remarkable in that the hemorrhage was very extensive in the left cerebral hemisphere and extended into both lateral ventricles, and yet the patient lived sixteen days.

In Cases 12 and 13 the ventricles were not implicated; in Case 12 life persisted a little over six days; in Case 13 almost two months.

It seems to be held by some that life must be terminated within a few days if the hemorrhage has destroyed a large part of one cerebral hemisphere, but Case 13

shows this is not necessarily so. In this case, in which life persisted almost two months, the clot was found partly encapsulated and measured 7 x 2.5 cm. It destroyed the lenticular nucleus, a large part of the posterior limb of the internal capsule and extended to the island of Reil. It is truly remarkable that the brain may be so severely injured without a speedy termination of life.

The cases, briefly presented, are as follows:

CASE 1 (No. 308).—*History*.—W. E. L., aged 52, became hemiplegic on the left side after an apoplectic attack November, 1905, and was unconscious twenty-four hours. He became able to walk later, and on different dates had a few convulsions. On Nov. 20, 1905, shortly after noon, he fell to the floor, and was put to bed perfectly conscious, but very gradually he began to lose consciousness, and in about an hour after the fall he was entirely unconscious. He then had a severe convulsion and died about 5 p. m. the same day. He lived about five hours after the beginning of the apoplectic stroke.

Autopsy.—A large hemorrhage had destroyed the right lenticular and caudate nuclei, and had filled all the ventricles, even the fourth, and had extended to the base of the brain. The hemorrhage was chiefly ventral to the lenticular nucleus, but extended into the front part of this structure, and had broken into the anterior part of the right lateral ventricle. Much blood was found over the pons and medulla oblongata.

CASE 2 (No. 370).—*History*.—John E., aged 26, was admitted to the hospital Sept. 15, 1906, and died Nov. 17, 1906. About five weeks before admission he took a large dose of quinin; he then became very drowsy and was unconscious for three days. When he recovered consciousness he was paralyzed on the left side. He was able to walk about a week later. The notes state that "yesterday" in the afternoon he had severe repeated convulsions, lasting until his death. His pulse reached 160; sweating was profuse; he vomited, and died the following day at 10:30 a. m. He, therefore, lived about eighteen to twenty hours, or at least from the afternoon of one day to 10:35 o'clock of the next day.

Autopsy.—The hemorrhage filled all the ventricles completely, destroyed the greater part of the right cerebral hemisphere, including the region of the lenticular nucleus and the right occipital lobe.

CASE 3 (No. 357).—*History*.—Charles S. was brought into the hospital Oct. 2, 1906, unconscious, and did not regain consciousness before his death, on Oct. 5, 1906. He was paralyzed on the right side. He lived at least three days.

Autopsy.—A hemorrhage was found measuring 2x7 cm. It destroyed the left lenticular nucleus, part of the posterior limb of the internal capsule, and extended almost from the posterior horn of the lateral ventricle to the anterior horn, and ruptured into the latter, distending it with a recent clot.

CASE 4 (No. 286).—*History*.—William U., aged 72, had had diabetes many years. He retired at his usual time the night before admission to the hospital, and was found at noon, March 15, 1905, lying at the side of the bed. When seen by his physician at 12:30 p. m. he was semi-conscious and paralyzed in the left upper and lower limbs. His speech was mumbling. He was brought to the hospital March 15 and died March 26. He, therefore, lived eleven days after the stroke.

*From the Department of Neurology and the Laboratory of Neuropathology in the University of Pennsylvania.

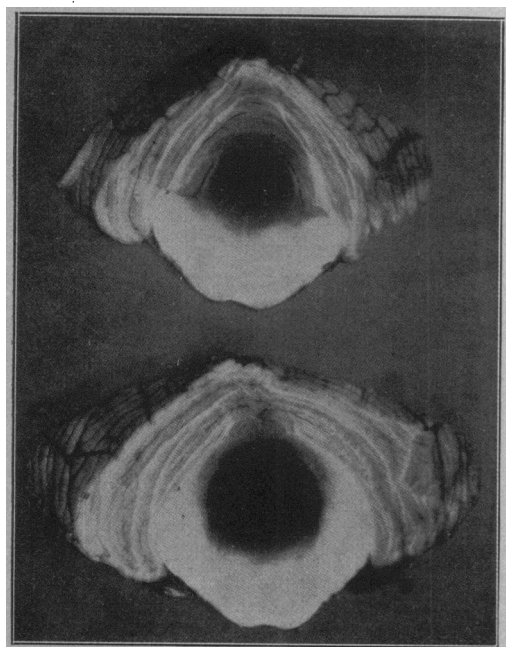
Autopsy.—A large hemorrhage was in the right internal capsule, optic thalamus and lenticular nucleus and a clot filled the center and part of anterior horn of lateral ventricle.

CASE 5 (No. 144).—*History.*—Annie S., aged 35, was admitted to the hospital Nov. 5, 1897, in a semi-conscious condition, with a history of acute alcoholism of three weeks' duration. Some twitching of the facial muscles was noticed on the fifth day. The date of death is not given, but the statements show that she lived at least five days.

Autopsy.—A large hemorrhage was found in the left lateral ventricle, not extending into the posterior horn. The inner surface of the lenticular nucleus and the anterior portion of the optic thalamus were disorganized. The hemorrhage was evidently recent, the blood being dark colored and soft.

CASE 6 (No. 50).—*History.*—James L., aged 76, was admitted to the hospital Nov. 5, 1897, paralyzed on the right side and deeply stuporous. In the morning of the same day he had fallen unconscious while walking. The day following admission he was more conscious and noticed those about him, but he gradually became more stuporous until his death. The date of death is not given in the notes, but the statements show that the patient lived at least until the next day.

Autopsy.—A large amount of clotted blood was found in the left lateral ventricle. Hemorrhage filled both ventricles,



Photographs of sections made through the pons in Case 2, in which the greater part of the right cerebral hemisphere was destroyed and all the ventricles were filled with blood. The great distention of the fourth ventricle by the blood clot is shown. The surrounding tissue was stained from the blood. The patient lived eighteen to twenty hours after the attack began. (Photographs by Dr. Alfred Reginald Allen.)

and on the left side had invaded the thalamus, the posterior portion of the lenticular nucleus, the internal capsule, and the adjoining part of the occipital lobe.

CASE 7 (No. 318).—*History.*—James W., aged 37, became paralyzed on the right side during the night of July 4, 1905. He improved greatly. He fell on the evening of Dec. 12, 1905, and became stuporous, had conjugate deviation of the head and eyes to the right, and paralysis of the face and limbs on the left side. He improved considerably. On December 23 it is stated that he had been more stuporous for a few days and his pulse was weaker. He was still more stuporous on December 24, did not change his position in bed, and the pulse was weak and rapid. The pulse was hardly perceptible on December 25, and the man was very weak. He lived five or six days in a very critical condition.

Autopsy.—A hemorrhage, 2.5x3 cm., was found in the occipital lobe. It extended into the lateral ventricle.

CASE 8 (No. 336).—*History.*—Charles H., aged 80, was admitted to the hospital Oct. 28, 1899, and died March 11, 1906. He was brought from the out wards March 6, 1906, in an unconscious condition. The breathing was stertorous. The head and eyes were turned to the left. The right upper and lower limbs and the right side of the face were paralyzed. He died March 11, 1906, at 10:40 a. m. He lived about five days.

Autopsy.—The hemorrhage destroyed the posterior part of the left optic thalamus and of the posterior limb of the internal capsule and lenticular nucleus, and filled the descending horn of the left lateral ventricle.

CASE 9 (No. 273).—*History.*—Harriet J., aged 44, fell to the floor and became unconscious on Jan. 14, 1905, at 9 a. m. When she was brought to the hospital the same day she was stuporous but could be aroused, and was paralyzed on the right side. Speech was almost unintelligible. From 11 a. m. January 15 she was almost continually in convulsions until death. Lumbar puncture was performed at 5 p. m., and the patient died that evening. She lived about a day and a half.

Autopsy.—A large hemorrhage 6.5x4 cm., of recent development, was found in the left lenticular nucleus, extending into the internal capsule, and at the anterior end of the left ventricle had broken into the ventricle. Hemorrhage was found in both lateral ventricles, but mostly in the left.

CASE 10 (No. 429).—*History.*—Ernest W. was admitted to the hospital Jan. 25, 1908, and died Feb. 10, 1908. While working about the hospital on January 25 he suddenly fell and became paralyzed on the right side in face and limbs. He was stuporous but could be partly aroused. Loud commands were not heeded. He had dysphagia, aphonia and enuresis. He showed no improvement on February 2. The pulse was 105 and feeble. He lived sixteen days, a remarkably long time in consideration of the extensive hemorrhage.

Autopsy.—A hemorrhage occupied a large part of the posterior half of the left cerebral hemisphere, and both lateral ventricles contained blood. The clot within the hemisphere measured 5x5.5 cm. and at one level 5.5x6.5 cm.

CASE 11 (No. 230).—*History.*—Miss H., aged 50, fell on the evening of April 19, 1904, became completely unconscious, and seemed to be completely paralyzed. On April 21 the pulse was weak and respiration stertorous. She died that afternoon. Life was prolonged almost two days.

Autopsy.—A large hemorrhage was found filling the whole of the left lateral ventricle but not extending into the right ventricle. The substance of the brain was implicated in the lesion only near the anterior part of the left lateral ventricle.

CASE 12 (No. 241).—*History.*—Gottlieb R., aged 77, was admitted to the hospital July 19, 1904. The attack occurred suddenly during the night before admission, and the patient was found lying on the floor unconscious. Respiration was of Cheyne-Stokes type. The paralysis was complete on the left side. The pulse was rapid. The patient was partly conscious on July 20, and improved somewhat later until July 24, but died July 25. He lived a little over six days.

Autopsy.—A hemorrhage measuring 4x5 cm. had destroyed the greater part of the right lenticular nucleus, the posterior part of the posterior limb of the right internal capsule, and extended beyond the posterior portion of the optic thalamus.

CASE 13 (No. 348).—*History.*—Hesse, aged 40, was admitted into the hospital in an unconscious condition March 20, 1906. No history was obtainable. The patient had been found in a stable. He had conjugate deviation of the head and eyes to the left and paralysis of the right upper and lower limbs. He was stuporous and did not speak at any time. No marked improvement occurred during his long stay in the hospital. An operation was performed and a subdural hemorrhage over the left temporal region of the brain was removed. He died May 18, 1906, two weeks after the operation. This case was noteworthy because of the long duration of the hemorrhage.

Autopsy.—A large blood clot was found in the left cerebral hemisphere, measuring 7 x 2.5 cm. It had destroyed the lenticular nucleus, a large part of the posterior limb of the internal capsule, and extended to the island of Reil. The clot appeared of long duration and was partly encapsulated.

4409 Pine Street.