As regards the treatment of the women, I have found it necessary to educate the trainer first, because you will find it difficult to get competent women trainers for your patients; but here and there you can pick up one who will carry out your instructions. I find that when a woman will do that work, she will do it as well as a man. You make your point clear to the woman that you are going to have as your trainer, and then lay down rules in writing to be carried out.

CHLOROFORM FATALITIES: A REPORT OF CASES

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The prevalent use of chloroform as the anesthetic of choice in many districts of the United States and its use throughout this country almost to the exclusion of ether, and this in spite of the increasing evidence and more or less general knowledge of its grave dangers, induces me to report the following cases.

I hesitate to report them only because I am unable to give pathologic data concerning them. The clinical courses, however, of Cases 1, 2 and 3 are so typically those recently attributed to chloroform as the causative agent in producing acute degenerative changes in the liver and an acid intoxication, that I think little doubt can be entertained of the diagnosis. The fact that such changes have been induced experimentally in animals by chloroform, and that clinically nothing else seems to explain the condition so aptly, has led, I think, to the general acceptance of the belief that this train of symptoms is the sequela of an anesthetic in those peculiarly susceptible, and that it is very much more frequent after chloroform than after ether.

Notwithstanding the comparative rarity of these cases, those which are herein reported have all come within my experience or knowledge as having occurred in this city during the past fifteen months. Of the sudden deaths occurring during the administration, one of them was that of my own patient and the others of patients of my colleagues. None of them has been reported.

I am entitled to a word of explanation that I should have continued to run the risk of chloroform even after experience of the first case. I have, as a matter of fact, since then used ether almost altogether, but on some occasions the anesthetist available has had no experience with the administration of ether and there has been no choice in the matter. In Cases 3 and 4, my anesthetist was a nurse, inexperienced in the administration of ether, but of ample experience as anesthetist in a hospital in the United States where chloroform is, or was a few years ago, used in routine.

CASE 1.—Mrs. H., aged 24, a native, a nullipara, of the better class, well nourished, and with a history of previous good health, was operated on for appendicitis, Wednesday morning, May 11, 1910.

The attack had begun several days before but the earlier symptoms had abated, the trouble had become localized, but with a distinctly palpable mass and a persistent and increasing afternoon fever. The operation was done in the patient's home but under favorable conditions. The general condition of the patient was excellent, and the urine normal. A distended and unruptured appendix, showing on the surface small areas of beginning gangrene, was removed. The surrounding tissues, cecum, mesentery and omentum showed considerable edematous infiltration; there was no pus, and the pelvis was clear; the wound was closed without drainage.

The amount of chloroform used was about 100 gm. The patient stood the operation well. On the following morning there was little pain or distention; there was returning appetite, and urine had been voided twice since the operation; the temperature did not go above 100 or the pulse above 90. During the night, however, the patient was not quite so well; there was some mental depression and uneasiness. On Friday morning, the abdominal condition was unaltered; there was no pain nor vomiting and but slight distention; no indications whatsoever of a peritoneal infection; the temperature about normal and the pulse-rate less than 100. The hunger was gone, however; there was slight jaundice which deepened rapidly during the day; the uneasiness gave place to a marked restlessness and later active delirium, with periods of stupor; there was nausea but no vomiting until evening, when greenish matter containing brown shreds and later the black coffee-ground vomitus appeared. The pupils became widely dilated. Calomel had been begun early in the morning and later various enemata and croton oil, but all without result. If any urine was passed during the day, it was very scant and lost in the bed; there was no edema of the skin, which remained dry in spite of hot packs.

The patient grew steadily worse, the pulse more rapid and feeble; the temperature remained slightly above normal. Deepening coma preceded death which occurred at 5 a. m. Saturday morning, sixty-eight hours after the operation and about thirty-six hours after the first indefinite symptoms had been noted.

CASE 2.—Mrs. L., an English woman, aged 26, in good health, pregnant for the first time and in the third month of pregnancy, was cured by her physician for an incomplete abortion. The operation was done on Tuesday morning; no packing was put in the uterus. As the hemorrhage continued, chloroform was again given on Wednesday morning and the uterus packed with some strips of iodoform gauze.

I first saw the patient on Friday, about seventy-two hours after the first operation. The history was given that the previous day the patient had passed no urine and that about 2 ounces had been drawn by catheter, very dark in color, containing albumin and red blood-cells; no urine had been passed since then and but a few drops were obtainable by catheter. On Thursday she had become very restless, and during the night somewhat irrational; had vomited repeatedly a greenish fluid containing dark brown shreds; morphin had been given two or three times to quiet her.

The patient was at this time very restless, throwing herself about the bed, talking irrationally and complaining of thirst; her pulse was 110, of increased tension, and the temperature was normal. The skin was dry and distinctly jaundiced, though at no time did the jaundice become so marked as in Cases 1 and 3; there was no edema at this time. There was no dilatation of the pupil nor was this noted at any time; the patient had had, however, and continued to have, frequent doses of morphin. There was violent retching and frequent vomiting of small quantities of material as described above. Abdominal examination revealed nothing abnormal.

A diagnosis of chloroform poisoning was made, though the possibility of the symptoms being due to iodoform was kept in mind. The packing was removed and a douche given. Enemata had not been effective, so 4 drops of croton oil were given and as the vomiting was so incessant, this was repeated at intervals until the bowels moved. In the evening the patient had several dark, fluid and offensive stools.

An attempt was made to give alkalis by the mouth and by the rectum. Hot packs were given but the skin remained dry. The odor of acetone was noted on the breath.

On Saturday morning she was very much worse; entirely irrational, delirious and stupid in turn; the pulse was smaller and weaker, 120 to 140, the temperature about normal. There was slight edema noted over the tibia. No urine had been secreted. The patient was very hoarse, almost aphonic, and there was subcutaneous emphysema of the face and neck, supposedly due to a rupture in the upper respiratory passages caused by the violent struggles or vomiting. Salt solution was given intravenously.

The patient died in coma at 3:30 p. m., 101 hours after her first anesthetic and about fifty-four hours after the first unfavorable symptoms were noted.

CASE 3.—Mrs. T., aged 29, a native, primipara, of the middle class, well nourished, and with a history of good health previous to her pregnancy, was operated on Saturday morning, Aug. 5, 1911, for a ruptured ectopic pregnancy in the third month.

The abdomen was distended and, to the level of the umbilicus, filled with clotted blood. Many intrapelvic adhesions made the isolation and removal of the tube a matter of some difficulty and the woman was under chloroform for about two hours. The abdomen was irrigated with salt solution, left filled with the same and the wound closed without drainage. Salt solution was instilled by rectum following the operation.

The condition during the following twenty-four hours was good; no vomiting; pulse 104 to 114; temperature 99.6 F. On Sunday, however, the patient vomited a few times, greenish fluid containing dark brown particles; the pulse was 114 to 126; the temperature 99 to 100.6; otherwise there were no unfavorable symptoms.

During the third day, Monday, the vomiting, though not severe, was repeated several times; the pulse-rate was slower and the temperature not above 99.6; the bowels moved slightly following an injection of salt solution; urine was being passed in sufficient quantities; there was nothing to indicate intra-abdominal infection. In the evening, the patient was depressed and uneasy; said she was "going to die."

On Tuesday morning the temperature was normal and the pulse slower; there was slight jaundice; the uneasiness was succeeded, during the day, by extreme restlessness, so that constant watchfulness was necessary to prevent the patient getting out of bed; she became entirely irrational; there was some retching though not excessive; vomiting had ceased; the patient would take very little by mouth; thirst did not seem intense; the pupils became very widely dilated, and the jaundice deepened rapidly in hue.

The urine continued to be passed in fair quantities and contained bile and albumin; unfortunately no examination was made for acetone bodies. Calomel had been given early in the morning without result, also enemata. In the evening 4 drops of croton oil were given through a catheter passed through the nose, as the patient was refusing everything by mouth. This proved effective, several loose, dark stools resulting. Urine was being passed involuntarily. The temperature was normal; the pulse 100 to 110.

During Wednesday, the fifth day after operation, the condition continued about the same, periods of stupor alternating with the delirium; the jaundice became quite deep; the dilated pupils persisted; urine and stools were involuntary; there was no vomiting and the patient took a fair amount of water; some bile-stained serum escaped from the lower end of the wound.

On Thursday, after a quieter night, the patient was rational; the pupils smaller and active; vomiting, which had not occurred since Tuesday, was again provoked by food and water.

On Friday the patient was very much better, hungry and in good spirits, complaining only of some rectal tenesmus, which subsided on the insertion of an opium suppository; there was no more vomiting; the jaundice was less marked.

From this time the recovery of the patient was uneventful, and she was discharged August 20 with only a slight jaundice persisting.

It is quite difficult in any of these cases to fix exactly the time of onset of the unfavorable symptoms; in all of them it seems that the first symptom manifested was a mental depression and uneasiness. In Case 1 this was noted about thirty-two hours after operation; in Case 2, in less than forty-eight hours after the first operation; and in Case 3, disregarding the vomiting which occurred on the second day, not until fifty-eight hours after operation. Jaundice was noted early in all of them. It is to be noted, too, that in Case 3, which went on to recovery though the mental disturbance was quite as

severe and the jaundice even more marked, the patient continued to secrete urine in fair quantities, while in Cases 1 and 2 anuria occurred shortly after the onset of the symptoms.

It is recognized that pregnant women are the most liable to these degenerative changes. Patients 1 and 2 were both near the close of the third month of pregnancy.

CASE 4.—Manuel C., Mexican laborer, aged 24, of robust physique, was sent to the hospital, October 22, 1910, for a beginning cellulitis of the foot, resulting from a puncturing wound. On the afternoon of same day chloroform was given that incision might be made and the wound cleaned.

During the scrubbing of the foot and before anesthesia was complete, the patient stopped breathing, but the respirations were promptly resumed and the condition was apparently normal; the anesthetic was continued. Before the incision was completed, the anesthetist advised me that the respirations had again ceased. This time no efforts at resuscitation were of avail. Inversion of the patient, artificial respiration with oxygen administration, did not cause even a spasmodic effort toward their reestablishment. The respiratory failure distinctly preceded cessation of the heart action.

CASE 5.—J. G., a Mexican mechanic, aged 28, of apparent good health, went to the office of Dr. P. for a cellulitis of the arm. A physician from an adjoining office was called to assist in operating. There was no discoverable heart trouble or contra-indication to an anesthetic.

Following some struggling efforts which the patient made during the early stages of anesthesia, the respirations stopped and all efforts to reestablish them failed.

The physician who gave the chloroform told me that he thought the cessation of the heart action occurred almost simultaneously with the failure of respiration, but of this he was not positive.

An autopsy performed by the police authorities is said to have revealed slight atheromatous changes in the heart and arteries.

CASE 6.—John M., a Swiss, aged 26, was admitted to the hospital April 24 under service of Dr. W. with extensive cellulitis of face and neck. The patient had difficulty in swallowing and some obstructive dyspnea, but was not cyanosed. The patient was operated on shortly after admission, as his condition was considered quite grave.

While incision was being made, the respirations very suddenly ceased. Because of the possibility of an obstructive edema, a tracheotomy was quickly done and every effort made to reestablish respirations, but all efforts were entirely unsuccessful.

In these cases of sudden death during the administration of chloroform, it will be noted that death occurred in all of them during the early stages of anesthesia. Cessation of respiration was the first symptom noted in each case.

As to the increased danger from an anesthetic in this altitude—about 7,200 feet—there is varying opinion. It seems to me that with the great majority of patients it makes no difference, but in those who have suffered from prolonged wasting diseases or whose ailment is in itself aggravated by the altitude, there is added risk.

Also the anesthetists tell me that it is more difficult here to secure complete anesthesia with ether given by the drop method than when it is so administered in a lower altitude and consequent heavier atmosphere.

Calle de Gante 1.

The Knowledge of the Physician.—The physician is a servant, not a teacher of Nature. He must know what his predecessors have known, if he does not wish to deceive both himself and others.—Hippocrates.