

CURRENT COMMENT AND CASE REPORTS

CURRENT COMMENT is a new department in **ANESTHESIOLOGY**. In it will appear invited professional and scientific correspondence, abbreviated reports of interesting cases, material of interest to anesthesiologists reprinted from varied sources, brief descriptions of apparatus and appliances, technical suggestions, and short citations of experiences with drugs and methods in anesthesiology. Contributions are urgently solicited. Editorial discretion is reserved in selecting and preparing those published. The author's name or initials will appear with all items included.

PULMONARY EDEMA AS A COMPLICATION OF SPINAL ANESTHESIA

The occurrence of pulmonary edema during anesthesia is infrequently reported (1). When it does occur it is usually during inhalation anesthesia. The following case resulted as a complication of spinal anesthesia.

Report of Case

A 17-year old white male was admitted for bilateral inguinal herniorrhaphy. Physical examination gave negative results except for the inguinal hernia.

The patient received nembatal, $1\frac{1}{2}$ grains (.097 Gm.), morphine $\frac{1}{6}$ grain (.011 Gm.), and scopolamine $\frac{1}{150}$ grain (.43 mg.) one hour before operation. He was awake, apprehensive and talkative on admission to the operating room. Blood pressure was 110 mm. systolic and 70 mm. diastolic immediately before operation.

9:23 a.m. With the patient in the lateral position, 140 mg. of metycaine, diluted to 14 cc. with distilled water to make a 1 per cent solution, was injected between the second and third lumbar interspace, with the head down 2 degrees. The patient was immediately turned to the supine position and placed in a 5 degree Trendelenburg position.

9:25 a.m. Sensory anesthesia was complete to the sixth thoracic nerve. Blood pressure was 126 mm. systolic and 86 mm. diastolic.

9:27 a.m. Sensory anesthesia was complete to the clavicle. Blood pressure was 130 mm. systolic and 90 mm. diastolic; pulse was 120. Oxygen was administered by a gas machine.

9:30 a.m. Blood pressure was 140 mm. systolic and 90 mm. diastolic; the pulse

was 140 and of fair quality. Sensory anesthesia was complete over the entire body. The patient was using his accessory muscles of respiration. The minute volume exchange was markedly depressed. Passive respiration by pressure on the breathing bag was required for adequate ventilation.

9:35 a.m. Blood pressure was 160 mm. systolic and 90 mm. diastolic; pulse, 140. Respiratory paralysis was complete. Patient still could open his eyes when spoken to. Operation was started and 5 per cent dextrose solution was given intravenously. The patient's condition appeared good.

9:40 a.m. Blood pressure was 100 mm. systolic and 80 mm. diastolic; pulse, 140. Patient lost consciousness.

9:43 a.m. Pulse could not be palpated at the wrist. Four units of pitressin and 20 mg. of ephedrine were given intravenously, with no apparent effect. The intravenous fluids flowed rapidly in a steady stream. Patient was unconscious but an active corneal reflex was present. The pupils began to dilate. The carotid pulse could be palpated.

9:45 a.m. Pitressin, 6 units, and ephedrine, 30 mg. were given intravenously, with no apparent effect. The condition of the patient rapidly deteriorated and the carotid pulsations were almost imperceptible. The pupils had dilated but the corneal reflex was present, although less active.

9:48 a.m. Adrenalin, $\frac{1}{4}$ cc., was given intravenously, with no apparent effect. The patient appeared to be in extremis.

- 9:50 a.m. Adrenalin, 3/4 cc., was given intravenously with no immediate effect.
- 9:55 a.m. Plasma was administered intravenously.
- 10:00 a.m. Circulation improved somewhat. The radial pulse could be palpated with difficulty.
- 10:03 a.m. Blood pressure was 160 mm. systolic and 90 mm. diastolic. It was possible that the adrenalin was just becoming effective because of the poor circulation.
- 10:05 a.m. Patient started to move head and arms and gave evidence of returning to consciousness. His general condition appeared to be improved. The pulse rate was about 140 when suddenly eructation of a large bolus of air occurred. Following this the pulse rate immediately decreased to 80.
- 10:10 a.m. Blood pressure was 140 mm. systolic and 90 mm. diastolic; pulse, 80. The patient became a little restless and started to breathe. Plasma, 500 cc., and 5 per cent solution of dextrose 1,000 cc. had been given intravenously.
- 10:15 a.m. Blood pressure was 110 mm. systolic and 80 mm. diastolic. Pupils were contracted.
- 10:20 a.m. Patient began to have pain in the incision and was able to move legs.
- 10:25 a.m. The spinal anesthesia was supplemented with cyclopropane and ether. Blood pressure reading remained the same and the pulse decreased to 60.
- 10:35 a.m. Blood pressure was 120 mm. systolic and 80 mm. diastolic; pulse, 60, and the general condition appeared to be fair. Operation was completed. The patient was mildly cyanotic and showed signs of hypoxia while breathing 100 per cent oxygen.
- 10:45 a.m. Patient became more cyanotic when administration of oxygen was discontinued. Pulmonary edema was detected at this time and rales could be heard over both lungs. Patient was conscious and moved himself from the operating table to the cart. The cyanosis decreased when oxygen was again administered by face mask.
- 10:50 a.m. Atropine, 1/150 grain (.43 mg.) was given intravenously. At this

time an attempt was made to pass a Levin tube; this resulted in an episode of violent coughing, with removal of a large quantity of frothy, reddish mucus. A roentgenogram taken at this time showed considerable pulmonary edema. The patient was returned to bed and 100 per cent oxygen was administered by a Barach oral meter mask, with improvement in the patient's color.

3:30 p.m. Patient's appearance was good and the oxygen by face mask was discontinued. At this time a few scattered rales were audible at the base of both lungs.

4:30 p.m. Patient's appearance was still good. Temperature was 101 F., pulse 80, and respirations were 24. He had received no medication after operation and apparently was comfortable.

7:00 p.m. Temperature was 102 F., pulse 96, and respirations were 20. His appearance was good. Only a few rales were audible at both bases of the lungs. The temperature returned to normal on the second day after operation and convalescence continued uneventfully.

SUMMARY

Acute pulmonary edema occurred in a patient who had severe circulatory depression and complete respiratory paralysis following administration of 140 mg. of 1 per cent metycaine solution for subarachnoid block. The intravenous therapy used to restore the circulation probably contributed to the production of the pulmonary edema.

Inasmuch as intravenous therapy is frequently employed to combat circulatory failure during spinal anesthesia, acute pulmonary edema may occasionally result, even in patients who are good risks.

A. J. FISHER, M.D.,
Huron Road Hospital,
East Cleveland, Ohio

REFERENCE

1. Bookhamer, J. W., and Cullen, S. C.: Pulmonary Edema During Anesthesia—Case Reports, *Anesthesiology* 4: 263-265 (May) 1943.