



FIGURE 2.

hanced by removing a large part of the weight ordinarily supported by the lower shoulder. Also contributing to the patient's comfort is the fact that the upper extremities are allowed to rest in a relaxed position.

From the anesthetist's point of view the primary advantage is increased facility in the management of the patient during anesthesia. The blood pressure cuff may be applied to either arm where it is free from kinking and easily available for adjustment. Veins in either upper extremity

are quickly accessible with no adjustments or disturbances of patient or surgeon. Of importance to us as an added factor of safety is the lateral flexion of the cervical and upper thoracic spine which may be easily maintained during the spinal anesthesia with hyperbaric agents (the technique in common use at this hospital).

The model illustrated, here, was improvised from materials at hand by our brace maker, T/3 John Hauser.

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THE TOXIC EFFECT OF PONTOCAINE EMPLOYED LOCALLY

A CASE REPORT

A recent acute and fatal toxic reaction to pontocaine which was being used locally in the preparation of a patient for a bronchogram provided the stimulus for a review of the literature covering toxic reactions to this drug.

Apparently such severe and even fatal reactions are far too common. In 1939

Fasselt (1) reported two reactions to pontocaine (2 per cent) in anesthetizing the throat prior to the removal of foreign bodies by bronchoscopic methods. All symptoms, however, disappeared spontaneously in these cases. Phillips (2) and his associates reported a similar reaction in a patient who was undergoing a broncho-

scopic examination. In this case, generalized tonic contractions occurred which were controlled by Dial (2 cc.). The patient recovered. Schoen (3) reported three fatal reactions to topical anesthesia with pontocaine prior to bronchoscopy. Wagner described a case in which 6 cc. of a 2.5 per cent solution of pontocaine applied to the larynx in six to eight minutes resulted in convulsions and a fatal outcome. In the case reported by Cazzaniga a total dose of less than 0.13 Gm. of pontocaine was employed, the patient developing severe convulsions several seconds after the initial administration and dying one-half hour later. Freeman (4) reported four serious accidents with pontocaine employed as a mucous membrane anesthetic in gastroscopy. Hancock (5) had two deaths from the use of pontocaine also used in gastroscopy. Both of these patients, however, were cachectic and suffered from carcinomatosis. Pfeiffer (6) and later Schumacker reported sensitivity to 0.5 and 1.0 per cent pontocaine solutions when administered in the eye. Videhach mentioned three cases of pontocaine eczema in doctors using this drug in their practice.

Thomas and Fenton (7) provide a series of cases of their own in which pontocaine was shown to possess definite toxic properties. The first patient gave a history of asthma, but no history of drug sensitivity. During bronchoscopy, while receiving a second spray of pontocaine (2 per cent) five minutes after the first, he had a sudden, severe, asthmatic attack and he died thirty minutes later. A woman, giving a history of pulmonary tuberculosis of one year's duration and with no known allergy, after receiving 5 cc. of pontocaine solution by pharyngeal spray, became faint and suffered a generalized convulsive seizure with frothing at the mouth that persisted until respirations ceased. Two other patients, both women, underwent bronchoscopy under pontocaine local anesthesia to establish the diagnosis of bronchiectasis. Feeble respirations, cyanosis, weak pulse and clonic convulsions developed in both patients. Only after the exhibition of epinephrine and oxygen did these patients return to consciousness. In both cases skin tests for pontocaine sensitivity later proved to be positive. A 58 year old man,

following a gastric resection was being prepared for gastroscopy with a 2 per cent pontocaine gargle to be followed by a 5 cc. spray, this to be repeated in ten minutes. About fifteen minutes later, the patient became stuporous, suffered clonic convulsions involving the arms and legs, lacrimated and there was drooling of saliva and grinding of the teeth. The skin was cold and clammy and the lips were cyanotic. This reaction lasted ten minutes, but the patient recovered. One patient, ten minutes after receiving 5 cc. of 2 per cent pontocaine prior to gastroscopy became pulseless, convulsive, developed jerky respirations and died. Necropsy showed the presence of carcinoma of the stomach with metastases to the liver, acute passive hyperemia of all viscera, dilatation of the right auricle and ventricle and fibrous pleural and peritoneal adhesions. Three other cases were marked by nystagmus and convulsive seizures, but all three patients survived.

REPORT OF A CASE

A white female, aged 48 years, was admitted to the medical service of the Jewish Hospital on March 31, 1944, with a diagnosis of bronchial asthma. Her past medical history included an attack of influenza at the age of 22 years, leaving her with a productive cough of a purulent nature. On the basis of positive findings in the sputum, a diagnosis of tuberculosis was made some years ago, but this condition was apparently kept under control without hospital or sanatorium care. Her sputum for the past few years had been negative. She experienced her first real asthmatic attack in 1937. From 1937 to 1942 the patient had several attacks of an asthmatic nature. Within recent weeks prior to the present admission the coughing was more persistent, less productive and asthmatic attacks more frequent. Sixteen days before being hospitalized bronchoscopy was performed and a diagnosis of chronic tracheobronchitis was made. For bronchoscopy the anesthetic employed was 2 per cent pontocaine used by spray.

Physical examination revealed a poorly developed woman in fair nutritive condition, in no acute distress, cooperative, alert and of average intelligence. Physical

findings were neither extraordinary nor contributory. Five days after admission preparation was made for a bronchogram. No sedation was given before the administration of the pontocaine. The first dose of 2 cc. of a 2 per cent solution was given through a nasal catheter that was attached to a 2 cc. syringe. About four minutes were consumed in the instillation of the first 2 cc. While the syringe was being refilled the patient was alert, well oriented and offered no complaints. During the course of the injection of the next 1 cc.—now eight minutes from the beginning of the initial instillation—the patient closed her eyes and silently slumped forward. She was placed immediately in a recumbent position. Three minutes after the onset of toxic signs she had the first mild convulsive seizure. Sodium phenobarbital, 2 grains, was administered intravenously and the convulsion subsided only to recur in a more severe form with frothing at the mouth. The same sedative in double dose was given and there was prompt diminution in the severity of the attack. Pharyngeal aspiration by suction apparatus was carried out, and oxygen and coramine were administered when the respirations became irregular and shallow. Until this time the pulse was full and regular at 98 per minute, but suddenly the heart beat became weaker and the pulse dropped to 40 per minute. Epinephrine and caffeine sodium benzoate proved to be of no avail and the patient died about thirty minutes after the first sign of a toxic reaction.

The essential findings at necropsy were: Slight edema of the arytenoid cartilages. The tracheobronchial tree was moderately inflamed. The left lung was intensely congested, contracted and non-airbearing. The right lung was edematous and contained an excess of blood. There was noticeable congestion of the liver, spleen and kidneys. Histologic examination substantiated the macroscopic findings. In the lung there was acute severe congestion with beginning thrombosis, a slight hypertrophy of the bronchial muscularis, interstitial fibrosis, and chronic and subacute bronchitis. The congestion of the kidney, liver and spleen seen grossly was verified microscopically.

COMMENT

This case is noteworthy because it again points to the fact that pontocaine is an anesthetic of marked toxic properties. It also directs attention to the fact that a patient may ingest pontocaine by absorption through the mucous membrane without deleterious effects on one occasion and yet, when the same anesthesia is repeated within a relatively short time, it may prove fatal. This raises the question as to whether a sensitivity toward pontocaine was created, or whether any injury to the mucous membranes of the air passages at the time of the earlier bronchoscopic examination allowed later a greater and more rapid absorption of this toxic substance. It is wholly possible that in asthma or other allergic conditions, pontocaine is more likely to prove toxic than in patients with no such sensitivity. Perhaps, moreover, it is more than a coincidence that serious disease of the lung parenchyma existed in several of the fatalities previously reported. In any case it would appear that the use of a concentration of pontocaine of 2 per cent strength by the bronchoscopist and gastroscopist is fraught with no little danger. Perhaps the use of a 0.5 per cent solution employing slightly greater amounts and a greater length of time to produce anesthesia would avoid such serious reactions. It is questionable whether a negative skin test for sensitivity to pontocaine is reliable as a safeguard against such an accident as occurred in the case here reported.

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