CASE REPORTS

Respiratory Obstruction

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A 14 year old white boy was admitted to University Hospital five months prior to operation with the diagnosis of acute ulcerative colitis and regional enteritis. During this period he had frequent bloody bowel movements, spiking fever, while his treatment consisted of bedrest, blood transfusions, and large doses of adrenal corticoids. His moods of depression necessitated psychotherapy. One month prior to operation he developed homologous serum jaundice. This patient was scheduled for exploratory laparotomy and was premedicated with 25 mg. meperidine and 0.4 mg. atropine. At 9:05 a.m., 200 mg. of thiopental were injected intravenous and the patient was maintained on cyclopropane and oxygen with no difficulty. After oxygenation, succinylcholine 60 mg. was injected intravenously and a No. 32 French cuffed endotracheal tube was inserted easily. At that point his lungs became increasingly more difficult to inflate, despite the fact that a total of 15 mg. of *d*-tubocurarine had been injected intravenously. A Bird ventilator used to inflate the lungs with approximately 500 ml. of gas required 35 to 45 cm. of water pressure. A total compliance (C_T) at that time as measured with a Janney syringe was 0.03. Pulse rate increased to 120 per minute. Efforts were made to alleviate the obstruction including inflating and deflating the cuff, moving the endotracheal tube in and out, and suctioning the endotracheal tube. Anesthesiologists present described the condition as "chest wall spasm" or "bronchospasm," but no improvement in this obstruction could be obtained. Auscultation of the chest revealed no wheezes or rales and both lung fields were adequately inflated although expiration time was extremely prolonged. At no time was cyanosis seen nor did the blood appear dark. The inhalation oxygen concentration was approximately 80 per cent.

FIGURE 1.

Despite the fact that a suction catheter could be passed easily, at 10:00 a.m. the original endotracheal tube was replaced by a second No. 32 French tube. The original endotracheal tube had a thick viscous plug of mucus apparently occluding the entire lumen for a distance of about ½ inch at the bevel. (See figure 1.) At this point a second C_T was performed with noted improvement to 0.05 liter per centimeter of water. The lungs became much easier to inflate. Additional C_T's were measured every 15 to 30 minutes from that point and at no time did the C_T become greater than 0.04, an extremely low C_T. At 12:00 noon 60 mg. of succinylcholine was injected in order to obtain muscular relaxation, and the C_T at that point was measured as 0.03 liter per centimeter of water. Again it was extremely easy to inflate the lungs.

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The operation performed was resection of the terminal ileum and ascending colon, with moderate blood loss involving one unit of replacement. At approximately five hours after induction of anesthesia the operation ended, the patient was extubated and he awakened in the operating room answering questions rationally. He was taken to the recovery room with normal vital signs. There he developed Jacksonian type grand mal seizures one-half hour after entering. The convulsion began on the right side and lasted approximately 15 minutes. He was treated with Dilantin and phenobarbital parenterally. At 2:00 a.m. a similar incidence of grand mal convulsions occurred and was similarily treated. At 8:30 a.m., 19 hours after the termination of operation, the child was quiet, lucid, and asymptomatic.

This case is reported to illustrate how it is possible for a clinician to label respiratory obstruction "chest wall spasm" or "bronchospasm" while an entirely different reason may be responsible.

"Uninflatable" Inflatable Cuffs

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A cuffed spiral endotracheal tube was inserted to establish the airway for the maintenance of anesthesia for a craniotomy. The cuff, complete with pilot balloon, was inflated, prior to intubation, to insure absence of a leak. The patient was maintained on nitrous oxide, oxygen, curare and hyperventilation technique. Despite the fact that the cuff remained continuously inflated, it was impossible to prevent escape of gases from around the tube. Eventually a vaseline gauze pack was inserted and the operation was completed without further difficulty. On examination of the endotracheal tube it was found that the inflating tube was incorporated in the proximal end, and that the lumen could be easily occluded by subsequently inserting the endotracheal connector beyond a certain depth. Inflation of the cuff following intubation and fixation of the adaptor or connector can, if the pressure is gauged by the tension of the pilot cuff only, give a misleading impression and a false sense of security (fig. 1). Also, despite deflation of the pilot balloon, extubation with a fully inflated cuff can result in trauma to the respiratory passages. Preliminary inflation of the cuff, following insertion of the endotracheal connector would have avoided this potentially dangerous situation.

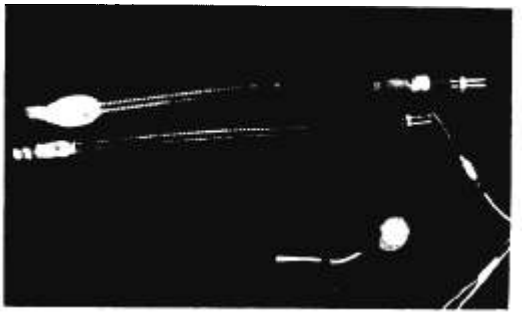

Figure 1.

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