CASE REPORTS

Respiratory Obstruction During Bronchography

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Anesthesia for bronchography in small children is a trying experience at best. The following case demonstrates one of the many serious hazards which may develop while doing this procedure.

Case Report

The patient was a 14 month old male child with a history of recurrent pneumonitis and asthma. Physical examination was negative except for expiratory wheezes in both lungs. Laboratory studies were within normal limits. Anesthesia was induced with nitrous oxide-oxygen and halothane. When anesthesia had been established, succinylcholine 20 mg. was given intramuscularly and, with the onset of apnea, the trachea was intubated with a 4.5 mm. I.D. plastic endotracheal tube. A non-rebreathing valve was attached to the endotracheal tube with a curved connector. An opening in the connector accommodated the catheter used to inject the dye. With this system it is possible to ventilate the patient’s lungs while injecting the dye. Satisfactory ventilation was maintained. The catheter used to inject the dye was a rubber no. 8 French with an opening at the end. This catheter was filled with propyolidone aqueous suspension (Dionosil), which is a very viscous, radiopaque solution, and was then inserted through the endotracheal tube.

An attempt was made to pass the catheter into the right mainstem bronchus under fluoroscopic control. The catheter was not visible under the fluoroscope, so it was partially withdrawn and again filled with dye in an attempt to secure visualization. It was very difficult to force the dye into the catheter. After about 2 ml. had been injected, it became virtually impossible to ventilate the patient. The heart began to slow and then no sound could be heard. The endotracheal tube was quickly removed and mouth-to-mouth respiration instituted. Closed chest massage was not instituted as the heart beat and pulse returned with one inflation of the lungs, thus it is unlikely that true cardiac arrest had occurred. With spontaneous return of the heart beat and pulse, the trachea was again intubated with a 5 mm., inside diameter, endotracheal tube and ventilation continued. The heart rate and rhythm were good and spontaneous respirations returned. (The patient had been apneic after the intramuscular succinylcholine.) Since the child now seemed in good condition it was decided to proceed with the bronchogram. Another 15 mg. of succinylcholine was given intramuscularly. When he became apneic, a 2.5 mm., inside diameter, catheter was passed with ease into the right mainstem bronchus. The dye was then injected and satisfactory films were obtained.

On examination of the endotracheal tube used initially, it was found to be filled with the viscous dye which totally occluded the lumen. It is assumed that while attempting to fill the catheter, its distal end must have been within the lumen of the endotracheal tube whose tip it obstructed. The injected dye succeeded only in filling the endotracheal catheter in retrograde fashion, to obstruct its lumen.

A no. 8 French catheter was then inserted approximately halfway down a new patent 4.5 mm., inside diameter, endotracheal tube and Dionosil was injected to see whether the endotracheal tube could be filled with this dye without becoming obstructed. The injected dye was found completely to fill the endotracheal tube even though the distal end of the latter was unobstructed.

This could have been a tragic experience. Fortunately, the child recovered with no ill effects. He awoke promptly and at this writing appears completely normal. Our experience suggests, however, that a less viscous radiopaque substance should be employed to provide greater safety during bronchography, especially in these very young patients.

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