RESPIRATORY OBSTRUCTION DUE TO BLOOD CLOT FROM BLEEDING BRONCHIECTASIS:

A Case Report

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It has long been recognized that flooding of the opposite lung during thoracotomy is a grave danger in all cases where there is fluid or semi-solid material in the affected side of the lung. This danger is particularly great in wet bronchiectasis, lung abscess, and haemoptysis. The following case is reported because it once again emphasizes this grave danger.

CASE REPORT

History. Patient Mrs. G. F., a white female, aged 25 years. She was admitted to University Hospital on December 24, 1955, because of haemoptysis. She gave a history of whooping cough at the age of 6 years and persistent morning cough with greenish sputum up to 2 or 3 tablespoonsful in amount each morning. Six years previously she had coughed up a little blood and one year thereafter she had had another bout of haemoptysis. She was married in 1952 and had no further complaints until following the birth of her second child in November 1955. Two weeks post-partum she coughed up blood for three nights running, about one cupful each time. She was admitted to her local hospital on December 21, 1955, where she had two more episodes of bleeding with as much as half a kidney basin of blood each time. Because of this, she was transferred to University Hospital by air ambulance.

Examination. The patient was a rather thin woman weighing 105 pounds, in physical state III on account of the history of repeated haemoptysis and diminished movement in the left thorax as well as slight dullness over both bases which was more marked on the left side. There were moist rales in both bases. Otherwise her physical condition was not remarkable. Her haemoglobin on admission to hospital was 10.9 gm. and P.C.V. 32 per cent. Although only one unit of blood was given, her preoperative haemoglobin had risen 5 days later to 12.3 gm. and P.C.V. to 36 per cent. X-ray on the day of admission showed both costophrenic angles well defined and clear lung fields. On December 29, however, X-ray of her chest showed a rather hazy, fluffy type of increased density over both bases, compatible with the aspiration of blood. She had two further episodes of haemoptysis of a cupful each on December 26 and again on December 29, and it was decided that operation should be done the following morning.

Anaesthetic management. The patient was premedicated with meperidine (Demerol®) 50 mg., scopolamine hydrobromide 0.4 mg., given intramuscularly at 6.50 A.M. She arrived in the operating room at 7.30 A.M. well sedated but not depressed. Her blood pressure was 110/80, pulse 88, and respiration 20. Anaesthesia was induced with dimethyltubocurarine (Metubine®) 5 mg. followed by sodium thiopental (Pentothal®) 2.5 per cent, 0.375 gm. In order to avoid all bucking which might stir up new bleeding, topical anaesthesia of trachea and larynx was carried out with tetracaine (Pontocaine®) 1 per cent, 20 mg. and a No. 9 cuffed endotracheal tube lubricated with jelly cyclomethycaine (Surfacaine®) 0.75 per cent was inserted with ease. There was no bucking upon intubation. Anaesthesia was maintained in a light plane with cyclopropane.

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and ether, and controlled respiration was instituted immediately after induction. The patient was placed in the right lateral position, and operation was started 20 minutes after induction of anaesthesia. There was at that time no evidence of moist sounds in the tracheo-bronchial tree. The pleura was opened approximately 10 minutes after skin incision and 10 minutes later, during exploration, some few moist sounds were noted and repeated tracheo-bronchial toilet was carried out. One hour and fifteen minutes after induction of anaesthesia, tracheo-bronchial toilet revealed the presence of a little blood, but this did not seem to be excessive and was aspirated. However, 10 minutes later sudden almost complete respiratory obstruction occurred which lasted for close to 10 minutes during which time the pulse rate fell to about 60 and there was increasing cyanosis which eventually merged into a degree of pallor. Patency of the endotracheal tube having been ascertained and mechanical defects in the machine having been rapidly excluded as possible causes, repeated tracheo bronchial toilet was vigorously continued and eventually it became possible to re-inflate the exposed upper left lobe, this was followed by some improvement in the patient's condition. It was suspected at that time that ventilation of the right lung was probably poor or absent, judging by the resistance in the breathing bag. By that time the pulse rate had risen to between 130 and 140, the blood pressure had remained pretty well stable throughout the episode of difficulty and thereafter. Tracheo-bronchial toilet was continued repeatedly while arrangements were made for bronchoscopy, but before they were completed the suction catheter was made to enter the right main stem bronchus and on its withdrawal a long clot, measuring approximately 5 inches, was removed. This clot did not seem to be new in its entirety but there was suspicion of some organization of at least part of it, with fresh clot surrounding it. Soon after removal of the clot, the patient's colour improved markedly and within half an hour her pulse rate had subsided to somewhere in the neighbourhood of 110, where it remained throughout. The lobe was removed approximately one hour and forty-five minutes after incision and two further tracheo-bronchial toilets yielded no further blood. The remainder of the operation proceeded uneventfully, and at the end of the operation a total of 1200 ml of blood, 750 ml of 5 per cent Dextrose in water, and 150 ml of normal saline had been given, the patient seemed to be in good condition, well oxygenated, with good blood pressure and pulse. Protective reflexes were present.

At the conclusion of the operation the patient was turned on her back having previously been given atropine sulphate, 0.4 mg intravenously. Succinylcholine 30 mg was administered and a 7 mm. bronchoscope was passed with ease. The trachea was entirely free of blood and none was found in the left main stem bronchus. However, a small clot, partially filling the lumen of the right main stem bronchus, was seen and was easily removed by suction. Thereafter the right bronchus and its subdivisions were found to be clean, as far as they could be visualized. The patient was then transferred to the recovery room, and placed in a high humidity oxygen tent.

Postoperative course The postoperative course was quite smooth on breathing exercises and postural drainage. Postoperative films showed some degree of atelectasis and density over the left base but nothing was seen on the right side. No fluid levels were demonstrated at any time. The pathological diagnosis was cylindrical bronchiectasis and unresolved bronchopneumonia with organization.

DISCUSSION

It was obvious to us before induction of anaesthesia that some form of safeguard should be established if possible to protect the unaffected right lung. Unfortunately, some difficulty had been experienced in obtaining all the equipment which had been ordered many months before for the Department, and neither Carlens tubes nor endobronchial blockers were available. The only right Bonica endobronchial tube available had been cut up by an orderly after

previous use in a similar case, and was found not to be serviceable on the day of operation. Consequently, very much against better judgment, mere endotracheal intubation was done, with reliance placed entirely on frequent aspirations and the fact that the surgeon had promised to co-operate by exerting pressure on the hilar structures in order to prevent undue escape of blood into the remainder of the tracheo-bronchial tree. Unfortunately, the hilum was so greatly involved in old inflammatory reaction that he was unable to give much assistance. Nevertheless, no difficulties were encountered until it became necessary to roll the lobe over and approach the hilum from behind in the course of dissection, and it was then that some blood must have escaped from the left side into the right main stem bronchus. From the appearance of the clot, it was evident that some old blood had become organized in the right bronchus but did not entirely obstruct it and that relatively little additional blood was needed to form a complete obstruction.

This case once again emphasizes the absolute need of managing all wet lungs from whatever cause by some means other than simple endotracheal anaesthesia, it would appear now that it would have been wise in the absence of suitable equipment to use a full-length endotracheal tube and cut a very long bevel which would hold the tube in the right bronchus without obstructing the eparterial bronchus, as suggested by Hall. The Overholt position would have been of advantage also.

SUMMARY

A case of complete respiratory obstruction due to "flooding" from bleeding bronchiectasis is described. A clot, approximately 5 inches long, which had completely obstructed the right main stem bronchus was removed by suction before the patient had come to serious harm. This case is reported in order to emphasize the need for protecting the opposite lung in all "wet" cases, whether due to bronchiectasis, lung abscess, or bleeding, by such devices as a double lumen catheter, endobronchial blockers, or unilateral bronchial intubation.