PROLONGED INTERCOSTAL PARALYSIS DUE TO A RELAXANT

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The following case may be of interest to anaesthetists. As relaxants are only a recent addition to the anaesthetist's armamentarium, any complication following their administration is worthy of record.

Case Report

A woman aged 33 was recently admitted to hospital for hysterotomy and sterilization. Seven years ago, following lobar pneumonia, she contracted acute nephritis, which has since become chronic. Three years ago a pregnancy was artificially terminated owing to the onset of incapacitating symptoms related to her nephritis; and for the past two years she has been subject to intermittent attacks of blurred vision.

Six weeks before admission investigations made at another hospital were reported to her doctor as follows: blood urea, 60 mg. per 100 ml.; urea concentration, less than 2 g.% on all readings; urea clearance test, "very low percentage"; renal function "very poor."

On admission the patient looked well. She had oedema of the ankles; albuminuria ++; her blood pressure was 180/110 and haemoglobin 55%. There was no evidence of cardiac failure or respiratory disease. Pre-operatively, 1 pint (570 ml.) of whole blood was given.

Anaesthesia was induced with sodium thiopentone, 0.4 g. The nose was sprayed with cocaine 15%. Hyperventilation was achieved with nitrous oxide, oxygen, and carbon dioxide, and a No. 8 nasal tube was passed blind. "Flaxedil," 100 mg., was then given, anaesthesia being maintained with a mixture of nitrous oxide and oxygen with minimal cyclopropane. After half an hour the abdominal muscles were beginning to tighten; a further dose of flaxedil, 40 mg., was therefore given. After each dose of relaxant the respirations returned in approximately two minutes. The patient being in the Trendelenburg position, assisted respiration was continued throughout.

After 55 minutes the operation was completed. The patient appeared to be maintaining a good colour, though the respirations were only diaphragmatic. She coughed slightly on extubation and was returned to the ward with an oral airway.

About 10 minutes post-operatively she appeared cyanosed. The colour improved immediately on reintubation and administration of oxygen.

About 1½ hours post-operatively, and shortly after extubation, consciousness returned and the patient asked for a drink. Shortly after this she became unconscious and was breathing "very shallowly." Breath sounds were present in all areas. She was slightly cyanosed. Pulse 130 a minute. Her colour improved with oxygen.

2 Hours Post-operatively.—Blood pressure 260/150. Eyes directed upwards (pupils equal and reacting minimally to light). A provisional diagnosis of hypertensive encephalopathy was made. Respirations diaphragmatic; chest wall sucked in on inspiration. Owing to the presence of moist sounds in the trachea and main bronchi, blind intubation and tracheo-bronchial suction were carried out. Oxygen was given. Magnesium sulphate was introduced rectally and hypertonic sucrose intravenously.

3¼ Hours Post-operatively.—Consciousness returned. Blood pressure 180/110. Patient a little distressed by tube.

3½ Hours Post-operatively.—Extubated, as good colour was being maintained. Respirations still only diaphragmatic.

5 Hours Post-operatively.—Slightly cyanosed. No improvement in respiratory excursions. Chest wall still indrawn on

inspiration. Accessory muscles still active. Conscious. No. 6 tube passed blind after cocaineization of nose and pharynx. Tracheo-bronchial tree again sucked out. Patient indicated immediate subjective improvement. From this point onwards the nasal tube was left *in situ* and intermittent tracheo-bronchial suction performed, mucoid material always reaccumulating. The patient's condition appeared to be gradually deteriorating.

9½ Hours Post-operatively.—Blood pressure 220/150. Patient very distressed. Otherwise no change.

10¼ Hours Post-operatively.—E.C.G. showed sinus tachycardia only. Lumbar puncture revealed normal pressure.

12¼ Hours Post-operatively.—Bronchoscopy performed: small amount of mucoid material removed.

13 Hours Post-operatively.—Atropine, 1/100 gr. (0.43 mg.), and neostigmine, 1.25 mg., given. Immediate improvement. Intercostal muscles came into action. Patient quickly returned to "normal." No further post-operative complications.

Comment

Whilst one would not presume to dogmatize about the reason for this occurrence, the following points of interest emerge: (1) Even excessive doses of flaxedil are known (in animals) to be excreted unchanged in the urine—30–100% in two hours (Mushin *et al.*, 1949). (2) The dosage of relaxant, though generous, was not excessive. (3) This patient has very poor renal function. (4) It would appear that the return of diaphragmatic respirations after the administration of flaxedil is not necessarily followed soon by the return of intercostal muscular tone. (5) Further confirmation is given of the fact that inadequate respiratory excursions are not detrimental to the patient provided adequate oxygenation is maintained.

The giving of neostigmine was delayed for two reasons: (a) The uncertainty whether it was indicated. Initially, the recovery of consciousness followed by a period of coma with concomitant increase in hypertension confused the picture from the anaesthetic aspect. (b) Following this, one was hesitant to administer neostigmine in view of its possible effects on the cardiovascular system.

We await the results of further renal-function tests.

Summary

A case is reported of prolonged loss of respiratory muscular tone following intravenous injection of 140 mg. of flaxedil in a woman with severe renal damage.

The picture is complicated by symptoms suggestive of hypertensive encephalopathy.

I wish to thank Mr. A. Briant Evans and Dr. J. B. Wyman for permission to publish this case.

REFERENCE

Mushin, W. W., *et al.* (1949). *Lancet*, 1, 726.

In consultation with the Invalid Children's Aid Association, the British Rheumatic Association is now determining how much it should be responsible for the care of children with rheumatic hearts. Local authorities in most areas operate a scheme providing for the medical and educational needs of these children, and, while most can return to their own homes after treatment and convalescence, there remain a small and at present unknown number of children who have either unsuitable homes or none at all. These sufferers, together with mothers of several young children, one of whom may need continuous care, need domestic help to prevent the suffering of either the invalid or the rest of the family. This problem is being taken up by the British Rheumatic Association's local branches. A threefold line of sociological inquiry is now being conducted: one forms part of the research by the Medical Research Council at the London Hospital; another will be based on information provided by the Registrar-General.