THE EFFICIENCY OF CARDIAC MASSAGE IN VENTRICULAR FIBRILLATION

Description of an instance of recovery of consciousness without spontaneous heart beat

BY

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A woman aged 55 years was admitted to hospital with a carcinoma of the right breast which had been present for 18 months. She had originally been seen in June 1958, but because of congestive heart failure mastectomy was decided against and she was treated with testosterone propionate 100 mg three times weekly. On this regime the tumour had remained quiescent, perhaps even becoming a little smaller. Her congestive heart failure was due to rheumatic heart disease with mitral stenosis and atrial fibrillation. Hypertension had been present for 9 years, her blood pressure varying between 260/140 mm Hg and 180/90 mm Hg. About 5 years previously she had had a severe attack of acute pyelonephritis from which she gradually recovered. During the last few years she had had several attacks of pulmonary emboli, originating no doubt in the right auricle. On one occasion a cerebral embolus caused a minor paresis for a few days and on three occasions emboli had lodged in her right arm. There have been no permanent sequelae.

On examination she was seen to be rather thin. An irregular mass measuring 5 × 3 cm was present in the upper and outer quadrant of the right breast. It was fixed to skin but not to pectoral fascia and no glands were palpable in the axilla. Consultation with a cardiological colleague resulted in a decision to go ahead with the mastectomy on this second occasion. Blood pressure was 210/90 mm Hg. Radiographs of the heart showed gross cardiomegaly with a cardiothoracic ratio of 60:40 (fig. 1).

Operation.

February 15, 1960. Premedication consisted of pethidine 50 mg, and atropine 0.6 mg. Sleep was induced with thiopentone 100 mg in 2.5 per cent solution given intravenously. This was followed by 50 mg of suxamethonium chloride and the lungs were inflated with oxygen for half a minute. A size 9 cuffed Magill endotracheal tube lubricated with 1.1 per cent cinchocaine ointment was passed under direct vision. Spon-
taneous respiration soon returned and anaesthesia was maintained through a Magill semiclosed attachment with nitrous oxide 4 l./min and oxygen 4 l./min with a trace of trichloroethylene.

The mastectomy was commenced at about 3 p.m. and 5 minutes later it was noted that the venous blood had become dark blue in colour and that a "jaw rugging" type of respiration had developed. The anaesthetist was uncertain of the carotid pulses and a diagnosis of cardiac arrest was made. The left chest was quickly opened through the fifth interspace and the heart found to be in ventricular fibrillation. The pericardium was opened and the heart rhythmically compressed. The colour improved and both pupils, which had been dilated and fixed, began to become smaller. Cardiac massage was continued and the patient began to move on the operating table and open her eyes. Eventually she responded to questions and to instructions to look up and so on.

When her own general practitioner spoke to her, she opened her eyes and nodded. The surgeon, assistant and anaesthetist had little doubt that at this point, although the heart had been fibrillating for 45 minutes or so, the patient was conscious. As massage continued, the fibrillation became coarser and at last, after 1 hour and 15 minutes, it suddenly reverted to normal rhythm with a good beat. At this time good spontaneous respiration had returned.

Preparations were being made to close the chest when the heart beat gradually became feeble and fibrillation began again. It was impossible to restore normal rhythm again and she died at 6.25 p.m., after about 2 hours of cardiac massage.

DISCUSSION
The interest of this case lies in the fact that rhythmic compression of the fibrillating ventricles can maintain a circulation to the brain in sufficient quantity, first, for the effects of an anaesthetic to wear off and, second, for recovery of a measure of consciousness. It is impossible to be precise about the extent of this since there was an endotracheal tube in position and the patient could not speak. However on several occasions she responded quite precisely to questions and commands and when these were repeated she responded in a uniform way.

The writers feel that experiences of this kind must have been recorded previously but a perusal of the recent Hunterial lecture on cardiac arrest by Milstein (1956) and of the monograph by McMillan (1955) reveals no reference to the subject. It is likely that the rapid recovery of respiration and of consciousness was due to the extremely short interval between the onset of the arrest and the institution of massage. The chest was already exposed for the mastectomy and all that had to be done was to open an interspace and thrust in a hand.

SUMMARY
During cardiac massage for ventricular fibrillation, a patient who had been fully anaesthetized, apparently recovered consciousness though the heart had not contracted spontaneously.

REFERENCES