RELIEF OF ACUTE LEFT VENTRICULAR FAILURE BY "PRISCOL"

BY

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The acute attack of left ventricular failure occurring with dramatic suddenness in the early hours of the morning cannot fail to impress itself upon those called to witness it.

Among the many typical features often seen in these attacks the extreme pallor of the patient is one of the most striking. Its persistence in lips and conjunctivae may have led others, as it has me, to call for a haemoglobin estimation, only to find the latter normal. The explanation lies in the intense peripheral vasoconstriction which constitutes an integral part of the pathogenesis of the condition (Fishberg, 1940; Wood, 1950). Whatever the initiating cause, it would appear likely that this vasoconstriction results in the sudden rise in blood pressure which precedes the attacks. To this, in turn, may be attributed the functional inabilities of the weakened left ventricle and the resulting pulmonary congestion. That these attacks most commonly occur in cases of hypertension lends weight to such speculation. Wherever the true explanation may lie, a therapeutic attempt to release this peripheral vasoconstriction would not seem out of place. The vasodilator tolazoline hydrochloride ("prisol"; 2-benzyl-imidazoline hydrochloride) was chosen for this purpose on account of its effectiveness and freedom from side-effects.

Braun and Fryd (1951) have studied the fall in blood pressure and peripheral venous pressure produced by prisol in various types of cardiac failure. These were most pronounced in cases of chronic cor pulmonale. However, they attribute these effects to peripheral venous dilatation.

Witham and Fleming (1951) have demonstrated the action of adrenaline, and Fowler *et al.* (1951) that of L-noradrenaline, in reproducing many of the precipitating causes of acute pulmonary oedema. Prisol might, by its adrenolytic action, therefore also contribute to the relief of the condition, although its action against noradrenaline is slight (Freis *et al.*, 1951).

The following is a description of the cases in which prisol has been tried.

Acute Pulmonary Oedema: Intravenous Injection

Case 1.—A frail senile woman aged 85 developed congestive cardiac failure with pronounced peripheral oedema. No valvular lesion could be demonstrated, but hypertension of the order of 200/100 mm. Hg had been present for several years. For some time she had suffered from mild attacks of cardiac asthma, controlled by oral aminophylline. Regular mersalyl injections relieved the oedema, and an episode of auricular fibrillation was controlled with "digoxin." However, digitalization could not be continued, with any preparation, owing to vomiting; but fortunately there was no recurrence of fibrillation. Shortly afterwards she developed an attack of acute pulmonary oedema. When she was first seen the condition had been present for some six hours, and there was extreme respiratory distress with the usual signs of acute pulmonary congestion. The lips exhibited a pallor approaching the colour of parchment. The haemoglobin content of the blood a few days previously was 11.5 g. per 100 ml. (78%); the red-cell count being 3,900,000 per c.mm. Prisol, 1 ml. (10 mg.), was slowly injected intravenously. After the first 0.1 ml. had

been given there was an immediate change in the colour of the lips to a bright cherry-pink, and the attack was relieved in four minutes. She was subsequently given prisol orally, 25 mg. twice daily; and in the ensuing six weeks there was no recurrence of left ventricular failure.

Case 2.—A 75-year-old lady had suffered from five attacks of acute pulmonary oedema in four months. These had been relieved by injections of morphine, but never in less than four hours after the injection. The present attack had started two to three hours before she was seen. Acute respiratory distress was present, her lips were somewhat cyanosed, and many bubbling rales and rhonchi could be heard all over both lung fields. No cardiac lesion could be detected (the patient had not been seen before), and blood pressure was 180/120 mm. Hg. Prisol, 1 ml. (10 mg.), was slowly injected intravenously. One minute later the lips had improved in colour and the blood pressure was 170/100 mm. Hg, but there was little relief of respiratory distress. Four minutes after the injection breathing was easier and blood pressure 180/110 mm. Hg. Five minutes after this the respiratory distress had been almost completely relieved and no rales or rhonchi could be heard with the stethoscope. The blood pressure was now 165/100 mm. Hg and the lips were a healthy pink colour. Three minutes later the improvement was maintained and the blood pressure was 175/100 mm. Hg. There was no recurrence of the attack, and she slept peacefully through the remainder of the night. In the morning her blood pressure was 165/110 mm. Hg.

Cardiac Asthma: Oral Administration

In addition to the acute cases described, prisol in doses of 25–50 mg. at night was administered to six patients who suffered from regular short attacks of nocturnal cardiac asthma. In these cases reliance had to be placed on the patients' account of the degree of relief experienced. In two cases there was complete relief, so that the patients slept the whole night through, whereas previously they had been awakened night after night in the early hours. In one there was partial relief, so that his attacks were reduced from half an hour to a matter of minutes. In one other case the drug could not be tolerated because of side-effects, and in the other two no relief at all was experienced.

Discussion

In the acute attack of pulmonary oedema a remedy is required which will give immediate relief. In my experience intravenous aminophylline, digoxin, and mersalyl have all proved extremely disappointing, and the only effective drug has been hypodermic morphine, resulting in extremely slow relief of symptoms, never in less than half an hour. It is felt that the rapid results obtained with intravenous prisol in the two cases described warrant a further trial of this drug. The longer-acting oral tablets may also have a place in the treatment of the milder forms of the condition.

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A course in international medical law has been started in the faculty of medicine at Bordeaux University. This is the first result in France of an attempt to secure adequate protection for doctors in cases of ethical conflict. The aim is to translate moral principles into written law. In 1947 Italy created a chair of international medical ethics at the School of Military Medicine. Mexico and Havana followed suit, and Belgium's four medical faculties plan to do likewise. The Bordeaux course is to include instruction in international medical law in both peace and war. Considerable attention will be paid to the position of doctors in the armed Forces and in relation to prisoners of war.