

chest easily inflated. Her heart rate was 52 beats/minute (apex); there were no palpable pulses and no response to stimuli. She was given adrenaline 1:1000 0.5 ml by subcutaneous infusion, 5% sodium bicarbonate 10 ml, and hydrocortisone 100 mg by intravenous injection. An intravenous infusion of plasma protein fraction was started. Within a few minutes peripheral pulses were palpable and systolic blood pressure was 50 mm Hg. She remained drowsy for about 12 hours but apart from having fever (37.4°C) made an uncomplicated recovery. Her parents declined further attempts at surgery and she was discharged.

Comment

The children received doses from 2.7 mg/kg to 4.2 mg/kg, which corresponded with the suggested range for preanaesthetic sedation. The preparation was returned to the manufacturer, but no abnormality was found. Possibly the suggested dose range of 2 to 4 mg/kg is too high. Vivori recommended 1.5 mg/kg to a maximum of 30 mg,¹ but as he combined this dose with morphine a precise comparison is difficult.

In two instances the episodes were probably partially self induced by posture. Other predisposing factors are not immediately obvious, although certain factors warrant consideration. Firstly, one of the two children who had previously received trimeprazine may have exhibited postoperative hypotension on that occasion too. Secondly, all the children had suffered recent infection of the upper respiratory tract or fever. Finally, two children had complained of abdominal pain immediately before the cardiovascular depression became apparent.

The Committee on the Safety of Medicines has recorded seven additional cases in which trimeprazine might have been implicated (personal communication), and there have been previous suggestions that the drug may occasionally produce serious cardiovascular complications. During the course of a study of premedication with phenothiazines trimeprazine was prematurely withdrawn as a result of two cases (out of 10 administrations) of "frightening" hypotension occurring before induction of anaesthesia.² Trimiglozzi and Ciaula reported one case in which hypotensive symptoms were such that treatment of pruritus by trimeprazine had to be stopped.³

The manufacturers have no record of hypotensive complications other than those quoted in this report.

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2 Dundee JW, Moore J. The effects of premedication with phenothiazine derivatives on the course of methohexitone anaesthesia. *Br J Anaesth* 1961;33:382-96.

3 Trimiglozzi G, Ciaula V. Clinical results on the antipruritic action of new phenothiazine derivative. *Minerva Dermatologica* 1959;34:712-15.

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Cardiopulmonary resuscitation skills of preregistration house officers

The importance of cardiopulmonary resuscitation is well established, yet studies in the United States found that only 29% of junior doctors could satisfactorily compress and ventilate a manikin—that is, perform basic life support.¹ A recent study from Addenbrookes Hospital showed that only 8% of junior doctors could manage a cardiopulmonary arrest adequately.² We report on the resuscitative skills of newly appointed house officers at a London teaching hospital.

Subjects, methods, and results

All house officers were tested during their first month as qualified doctors. On their first morning they were issued with a 10 question, five stem multiple choice paper, to be completed in 10 minutes. The practical evaluation was in two parts: part 1 tested their ability to perform adequate external cardiac massage and mouth to mouth ventilation using a standard Ambu training manikin. Special attention was paid to the force of compression, rate and rhythm, and whether external cardiac massage was done dangerously—that is, off centre or too low. The technique and effectiveness of mouth to mouth ventilation were also assessed. House officers failed if they were unable

adequately to ventilate the manikin or produce adequate chest compression, as recorded by the attached standard monitors, or if their technique was dangerous. Part 2 tested the house officer's skill at intubating an intubation model, connecting the endotracheal tube via standard connections to a standard anaesthetic machine, and delivering enough 100% oxygen. Special attention was paid to whether the doctor checked the laryngoscope and bulb, protected the teeth during intubation, and whether the tube was lubricated and the balloon satisfactorily inflated. The time taken to intubate and ventilate was recorded.

The multiple choice paper tested the management of ventricular fibrillation, asystole, and electromechanical dissociation. Priorities when conducting advanced cardiac life support were also assessed, as were skills in the management of complications arising during cardiopulmonary resuscitation—for example, pneumothorax.

The table summarises the results. Of the 29 doctors tested, 16 (55%) adequately and safely compressed and ventilated the manikin. Of the 19 who failed the intubation section, 18 could not intubate and 12, even if they had intubated, could not have delivered a supply of oxygen—either because they could not connect the tube to the anaesthetic machine or because they could not turn on the oxygen supply.

Results of multiple choice paper and practical examination

Topic	Percentage performing to an acceptable standard (60% or over in multiple choice paper)
<i>Multiple choice paper</i>	
General topics relating to cardiopulmonary resuscitation (two questions)*	73
Ventilation (four questions)	23
Management of ventricular fibrillation (one question)	33
Management of asystole (one question)	10
Management of electromechanical dissociation (one question)	47
Management of multiple ventricular extrasystoles (one question)	40
<i>Practical examination</i>	
External cardiac massage and mouth to mouth ventilation	55
Intubation and ventilation	34†
Checking of laryngoscope before use	10
Lubrication of endotracheal tube	10
Inflation of balloon	26

*Each question had five stems.

†Time taken varied from one minute 30 seconds to three minutes 20 seconds. Average time taken was one minute 55 seconds. No doctor intubated in less than 35 seconds (upper limit of time allowed for pass grade in advanced cardiac life support examination in the United States).

Comment

Despite 55% of these new doctors adequately and safely being able to perform external cardiac massage and mouth to mouth ventilation on a manikin, none would have achieved a pass in the advanced cardiac life support examination in the United States.³

Only 40% of patients dying from coronary artery disease survive long enough to reach hospital.⁴ This has been one of the main arguments for "bystander cardiopulmonary resuscitation" and the necessary large scale training programmes to make this possible.⁵ Patients may need to be resuscitated in the accident and emergency department, theatres, or on a general ward, where house officers may be the first on the scene. Only one third of doctors were able to intubate and ventilate and of the remainder, most could not intubate; and, even if they had, they still could not have established a sufficient supply of oxygen. The average intubation time of one minute 55 seconds suggests that perhaps junior doctors should use mask ventilation instead.

Cardiopulmonary resuscitation requires largely practical skills. Apart from the examination of patients, practical skills are neither taught nor, more important, examined in final medical examinations. Learning cardiopulmonary resuscitation by experience on patients will cost lives. Many doctors, having failed abysmally in a particular part of the study, were particularly receptive when given a practical tutorial.

The skills are not complex: many house officers failed because they were literally unable to turn on the oxygen supply of a standard anaesthetic machine. Others, lacking this vital skill, even attempted to unscrew the oxygen bottle from the trolley, which could have resulted in the cylinder falling from the machine.

Responsibility for this state of affairs must rest with the teaching authorities. Hitherto they have assumed that these skills are acquired by "osmosis," rather than by any organised programme of instruction. Our own college has made instruction in resuscitation compulsory at

both preclinical and clinical levels; it has also purchased the necessary equipment for these courses and sponsored the production of a teaching video. We suggest further that policy guidelines for hospital cardiopulmonary resuscitation should be set up, ideally identical with the Resuscitation Council (UK) guidelines. An officer working within the hospital should be designated as responsible for training and standardisation of basic and advanced life support programmes. These should be taught at the beginning and end of the clinical years and, most important, examined both theoretically and practically. We find that for a group of eight students this takes three hours for each session—a total of six hours in a course lasting four and a half to five and a half years: surely not a high price to pay?

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Delay in diagnosing testicular tumours

Testicular cancer accounts for about 1% of cancers among men and is increasing in incidence. It is potentially curable, even in the advanced state, because of effective chemotherapy. The efficacy of treatment, however, is dependent on stage and bulk of metastases,¹ and delays in diagnosis affect stage and therefore prognosis.² Delay may be attributable to the patient, the general practitioner, or the hospital. We undertook a retrospective study to measure these delays so that possible remedies could be made.

Patients, methods, and results

We obtained from the Yorkshire Regional Cancer Registry a list of patients with testicular cancer who had been operated on by consultant surgical members of the Yorkshire Urological Cancer Research Group from 1976 to 1982. A questionnaire was completed for each patient. Of the 139 cases identified, 132 questionnaires were returned. Eleven were rejected as not having primary testicular tumours, leaving 60 seminomas and 61 teratomas. The Royal Marsden Hospital staging system was used to stage the tumours.³

The principal delay in diagnosis was attributable to the patient (see table). Although some patients sought advice immediately, most waited, some as long as two to three years. Most patients were referred immediately by their

general practitioners, but in seven delay was more than two months and in two more than six months. The majority attended hospital within four weeks, but 4% waited two or more months: these delays may have been caused by insufficiently explicit referral letters. Orchidectomy was performed fairly quickly, but 10% waited four or more weeks for the operation. There was virtually no difference in the delays for the two types of tumour. The longer the total delay, however, the greater the proportion of higher stage patients in both histological groups, particularly among patients with teratoma.

Comment

Occasionally patients present with metastatic disease without testicular symptoms. Some change in testicular size or consistency, however, is usually noted by the patient or his partner. It is often the partner who insists that advice is sought about signs or symptoms that the patient may be prepared to ignore or is embarrassed about. Young men have little knowledge of testicular cancer. In North America Cummings *et al* advocated public education programmes for highschool children and that testicular self examination should be taught.⁴ Testicular self examination led to the early diagnosis of one case after the patient saw a film on the technique.⁵

It is difficult to know how this subject could be best approached in the United Kingdom. Undue concern about this rare condition is undesirable. The problem is how to impart the necessary information in a tasteful and sensitive way to all men at a relatively early age, without causing alarm or offence. Doctors performed well in this series, but this topic needs to be emphasised during general practitioner training schemes and postgraduate courses if standards are to improve. Patients with testicular swellings should be referred urgently to hospital, and the appropriate action undertaken speedily. Blood for serum tumour markers (β human chorionic gonadotrophin and α fetoprotein) should be taken in all cases of testicular swelling at the earliest opportunity.

The prognosis and the amount of treatment required for testicular cancer are both related to stage at presentation. Cure rates could be improved and morbidity decreased (less treatment required) if patients were diagnosed earlier. This will only be possible if both patients and doctors are alerted to this fact.

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Details of delays experienced by patients with teratomas and seminomas

Time periods in weeks	Teratoma (n = 61)			Seminoma (n = 60)		
	Mean	Median	Range	Mean	Median	Range
1st symptom to 1st medical advice	14.28	5	0-155	14.4	5	0-104
1st general practice attendance to referral letter	2.56	0	0-42	0.93	0	0-10
Date of referral letter to 1st hospital attendance	1.08	0	0-5	2.53	1.5	0-18
1st hospital attendance to orchidectomy	1.66	1	0-22	2.12	1	0-29