PRACTICE OBSERVED

Emergencies in the Home

Chest pain and cardiac arrest

DAVID RAWLINS

The first problem in managing severe chest pain is that of diagnosis. The main differential diagnosis is between myocardial infarction, pulmonary embolism, and dissecting aneurysm. Usually the history has to be relied upon in the diagnosis at home since signs are not helpful for diagnosis in the early stages of these illnesses, and investigations are not often of great value. Myocardial infarction is the commonest diagnosis and typically the patient gives a history of severe, gripping retrosternal chest pain radiating across the chest and often to one or both arms. It may radiate to the neck or jaw; often causes sweating and may cause vomiting; and may be preceded by short-lived attacks over the previous day or two.

In pulmonary embolism the pain, which is usually central, is often associated with marked dyspnoea. If pulmonary infarction has occurred the pain is typically unilateral, sharp, and worse with breathing and coughing. There may be a history of a deep vein thrombosis or of a recent operation. A dissecting aneurysm causes even more severe pain that usually radiates to the centre of the back and may travel down the spine. It is not common. Other rarer forms of chest pain are usually not so severe. Severe angina may be a problem and should be managed as myocardial infarction. Pericarditis does not usually present such an acute picture. Cardiac hysterias may be impossible to differentiate from myocardial infarction, unless one has a good knowledge of the patient and family. Even so most doctors will err on the side of caution for the first attack and treat it as though it were an infarction. One must exclude the possibility of acute abdominal conditions that may present with chest pain.

Initial management

The initial management should be adequate pain relief. A narcotic drug—heroin or morphine—should be given intravenously until the pain is relieved. Some doctors advise giving very small doses of 3-4 mg, but although you do not need to give more than is required for pain relief, I find that I usually need to give 10-15 mg. You should give it slowly so that you can stop when the pain is relieved. If the patient has delayed calling the doctor for a long while a mild analgesic may suffice, the pain having subsided naturally. If narcotics are not available buprenorphine is a powerful analgesic and is said to be as effective as narcotics. Relieving the pain of a dissecting aneurysm may prove to be very difficult, or nearly impossible.

Coleford, Bath
DAVID RAWLINS, MB, BS, general practitioner

Further management

In assessing patients the most important factors are pulse rate and rhythm, blood pressure and shock, and signs of heart failure.

Bradycardia—A pulse below 50/min in non-athletes responds well to 0·3 mg of intravenous atropine. If necessary, more can be given—up to 0·9 mg. This may also reduce shock and limit the final size of the infarction. If the patient is not shocked and is normotensive he may do well without being given atropine.

Tachycardia—More than 150 beats per minute is either supraventricular or ventricular tachycardia, the latter being much more serious. It will respond to intravenous lignocaine, 2-5 ml of a 2% solution. The accurate diagnosis of tachycardia—or of any arrhythmia—depends on the electrocardiograph.

Heart failure. This is usually acute left ventricular failure and is best treated with intravenous diuretics, such as frusemide (Lasix) or bumetanide (Burinex).

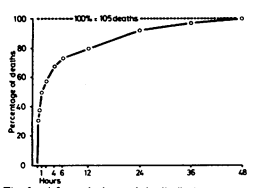
Vomiting—Cyclizine is available combined with morphine for an intravenous injection, or a similar antiemetic may be given separately.

Hypotension and shock are often associated with one of the above and should be treated appropriately. There is no specific treatment of proven value.

Antiarrhythmic drugs—None of these have been proved to reduce mortality if taken routinely as a preventative measure.

MYOCARDIAL INFARCTION

Further treatment for myocardial infarction depends on your assessment of all aspects of the problem. There is no evidence that these patients do any better in a coronary care unit than at home (though they appear to do worse in the general wards). Most doctors, however, would wish to admit to hospital those with bradycardia and other severe arrhythmias. Also one needs to admit those patients who cannot be looked after at home, owing to lack of family or nursing or medical support and care. I think that if a patient has been admitted to a coronary care unit for his first myocardial infarction it is probably best to admit him for his second, as he will miss that high technology if treated at home. When a patient is told he can stay at home he often gives a sigh of relief—and may be saying, "Thank heavens, it's only a small one."



Time from infarct to death: cumulative distribution.

Investigations in the early stages are not likely to be of much use because six hours after the onset of pain Q waves have only appeared in the electrocardiographs (ECGs) of only half the patients investigated. There are usually some other changes before this, however, though they may not be specific. Cardiac enzymes may take longer to become raised. One should arrange for ECGs to be taken, however, and for blood samples to estimate cardiac enzymes. If the patient is kept at home the general practitioner must be willing and able to stay for a while, preferably until at least two hours after the onset of symptoms. He should be willing to revisit the same day if necessary and on a daily basis for the next few days. It is best to get the patient moving after not more than two or three days in bed. Patients with pulmonary embolism or dissecting aneurysm should always be admitted to hospital.

Cardiac arrest—The most hazardous time is the first few minutes after the onset of symptoms. After this the chances of cardiac arrest diminish rapidly. Three-quarters of those who will die in the first 48 hours are dead in four hours; half of them die in the first hour. If you are called and attend soon after the onset of pain you are likely to encounter cardiac arrest.

The best treatment for cardiac arrest is rapid defibrillation. If a cardiac monitor or ECG is not available blind defibrillation should be attempted. Conducting jelly should be applied to the defibrillator paddles, which should then be placed on the chest, one over the mid-sternal region, the other over the apical region. Any assistant should stand away from the patient as the first shock of about 200 joules is given. If this is unsuccessful cardiac massage should be applied while the machine is recharging, and then a second shock at the same power—200 joules—should be given. If this is unsuccessful a third attempt at 400 joules should be made. This should be done before any other attempts at resuscitation are made. If the third attempt is successful, they will not be needed; if not, they are unlikely to be successful. The problem is that defibrillators are costly and uncommon. Very few general practitioners can afford the £750+VAT that the cheapest (Pantridge) model costs, and no other agency has shown much interest supplying those who need them. A few ambulances are equipped, and almost all district general hospitals and most cottage or general practitioner hospitals have them.

If a defibrillator is not available, a sharp blow on the chest may occasionally be successful and is certainly worth trying. If it is not successful, cardiopulmonary resuscitation—cardiac massage and some form of ventilation such as mouth-to-mouth—should be started in the hope that the patient might be defibrillated later.

Cardiac massage—If the patient's heart stops he will rapidly loose consciousness and then stop breathing. The more rapidly resuscitation is attempted, the more likely it is to be successful. Cardiac massage is best given with the patient on a firm surface. The heel of the hand should depress the patient's lower sternum 1½-2" at a rate of about 60 per minute. A short, sharp thrust is most effective, and the recovery phase should be as long as possible so that the heart can fill. You should continue for five compressions before your assistant inflates the lungs. If you are alone you can go on for 15 beats before inflating the lungs. If cardiac massage is successful and produces an adequate circulation the patient will regain consciousness and start to breathe spontaneously. I do not think that anyone can continue cardiac massage on a struggling patient for very long. If the patient remains unconscious, and provided the pupils do not become dilated and fixed, it may be possible to transport him to a defibrillator but the chances of a full recovery diminish with every minute.

Ideally, every general practitioner would carry a defibrillator and be confident in its use, and every ambulance would be equipped with one. If possible, while one or two people attempt cardiopulmonary resuscitation another establishes an intravenous line giving sodium bicarbonate 1 mol(mEq)/l per kg body weight to help correct the acidosis. Half this dose should be given every 10 minutes. If resuscitation from ventricular fibrillation is successful, the patient should be started on lignocaine.

The "café coronary"

This cause of sudden death, although it does not usually occur in the home, should be briefly mentioned. A bolus of food—commonly meat—gets stuck in the trachea. Usually middle-aged men who have been talking while eating and drinking are affected. The victim, who is speechless, will often grab at his throat and be terrified. The quickest and best treatment is to get behind the victim, encircle his chest or upper abdomen with your arms, and give a sudden sharp squeeze, expelling the bolus with a blast of the victim's expired air (the Heimlich manoeuvre).

I should like to thank Dr R D Thomas, consultant cardiologist at the Royal United Hospital, Bath, for his advice.

THOUGH I have endeavoured to render this Treatife plain and uſeful, yet I found it impoſſible to avoid ſome terms of art; but thoſe are, in general, either explained, or are ſuch as moſt people underſtand. In ſhort, I have endeavoured to conform my ſtyle to the capacities of mankind in general; and, if my Readers do not flatter either themſelves or me, with ſome degree of ſucceſs. On a medical ſubject, this is not ſo eaſy a matter as ſome may imagine. To make a ſhew of learning is eaſier than to write plain ſenſe, eſpecially in a ſcience which has been kept at ſuch a diſtance from common obſervation. It would, however, be no difficult matter to prove, that every thing valuable in the practical part of Medicine is within the reach of common abilities.

(Buchan's *Domestic Medicine*, 1786.)

Beyond the Surgery

General practitioner at school

H G BARNES

Since 1969 I have been school medical officer to the Newcastle Royal Grammar School. I succeeded Dr Andrew Smith in a job the pattern of which he set. He had followed the first school doctor, a paediatrician appointed by the board of governors on the advice of Sir James Spence, the first Nuffield professor of paediatrics. The brief then was that of adviser and consultant—a figurehead with little regular medical work with the pupils and staff. A new headmaster in the early 1960s recognised the value of regular sessions by the school doctor: Andrew Smith filled this bill with distinction. I was appointed when he left to devote more of his time to university teaching. For me this appointment was a pleasure and a challenge. I had spent seven happy years at the school as a boy in the 1930s. I had been influenced greatly by an outstanding headmaster and stimulating staff, as had my close friends. I was glad that I now had an opportunity to be part of an institution I respected. Perhaps I could repay some of the debt I felt I owed for the education I had received and the friendships I had made.

The Newcastle Royal Grammar School is a day school and like many of the well-known grammar schools was founded in bluff King Harry's reign. There are 1000 boys and 70 staff, with 40 visiting and clerical staff. The school functioned under the direct grant system until 1976 when, like many similarly placed, it elected to become independent. Predictably it thrives; competition for entry is as keen as ever, and the school plays an important part in the educational, cultural, and sporting life of Newcastle.

I started with a feeling of anxiety and strangeness in my new role. My office was a small room that I shared with the physical education master. I visited the school on two afternoons a week (I still do), and on those afternoons I managed to clear a space on the desk amidst stopwatches, gym-vests, sport shoes, jockstraps, embrocation, rugby balls, and other impedimenta. The chaos and sweaty aroma of this office did nothing for my medical image nor for my now enjoyment of the job. A determined request for more suitable accommodation was received sympathetically, and within a term I was installed in a smart new office in the gymnasium—weights, horses, mattresses, and fencing foils making way for couch, washbasin, desk, and filing cabinet.

Looking after 1000 boys

But what of the job itself? Why have a doctor for a school of 1000 apparently healthy boys? I am sure that a portion of what I do is repetitive, boring, and probably unnecessary, yet the contact I make with the boys when I examine them on entry is valuable in establishing early rapport. A record is made of previous illnesses and immunisations and family background, and each boy is examined briefly. A search into the entrance of the inguinal canal for a missing testicle, particularly on a cold winter's day, produces astonishment on the face of the boy concerned, a snigger, and a protective hitching-up of underpants. I examine about 220 boys each year, and this occupies me fully for two terms.

The local authority sends a nurse and secretaries in the summer term to help with the BCG programme. Getting consent forms signed by parents for this onslaught on their sons, and mustering those to be inoculated taxes my organisational ability. In 1980 medical demands competed with the athletic sports, so BCG jabs were administered between the heats of the long-jump and the 100 metres. Before my appointment I had never witnessed a Heaf test nor performed a BCG inoculation. A visit to my local chest physician ensured that I knew the technique of administering the dose and the few contraindications. With paramedical help it is not difficult to administer 100 doses in an hour.

I wish I could achieve more health education. Those in the first form, aged 11-12, have a lecture on sex, and they arrive at the lecture theatre agog with anticipatory pleasure and excitement. At first I wondered how on earth I would talk about sex to a room of noisy schoolboys. I use a film loaned from the local authority, which is fairly explicit, though dated, but leaves me with time to answer questions and rectify mistaken ideas. I reckon the boys to be well informed and able to express themselves quite well about the subject. Katherine Whitehorn learnt by "reading the rude bits in the Bible during sermons," and our generation learnt in the back of a car after the prefects' dance. If there was time enough small group seminars would be much more valuable, and I wonder if the school doctor is necessarily the right person for the job. I am convinced the Williams Committee was right in recommending much more sex education in schools and that this should be aimed at prepubertal children.

The 13 year olds are shown the film "20th century focus on smoking," which is presented so well by that Dr Kildare of the Royal College of Physicians, Professor Charles Fletcher. About 10% of the boys by their own admission are already smoking four to five cigarettes a day. Discussion of the hazards and illnesses brought about by smoking must have some dissuading effect. A pathological specimen of carcinoma of the lung borrowed from a friendly pathologist and passed around the room is certainly a successful tactic if measured by the noise of a fainting body sliding under the seat.

For school-leavers (this year 113 went to university, 15 with Oxbridge awards—I quote these figures to underline my natural anxiety on how to pitch a talk on health to intelligent young adults) we hold a health symposium. I talk to them about contraception, bravely holding up for their inspection samples of the pill, the coil, the cap, the sheath, and guard the samples well as the room empties after the talk: twice the Durex disappeared. I am aware I am too late in my educative efforts so far as some are concerned: 12% of girls under 16 have already had intercourse. I would have more impact and effect if I had the time to organise small group discussions. We also discuss venereal disease, and I give them the symptoms, complications, and treatment of these illnesses. I have the help of the local authority's health education officer in dealing with drugs and their abuse. I am now increasingly concerned about alcoholism, and I will have the help of the director of the Newcastle alcoholic clinic in presenting this subject at the next symposium.

Tynemouth, Tyne and Wear NE30 4HN
H G BARNES, MB, FRCGP, general practitioner

The rest of the medical work consists in treating, fortunately, slight accidents (most of them efficiently dealt with by the sports master), syringing the ears of members of staff (extraordinary the amount of wax that accumulates in academic meati), giving support to the odd new boy with his anxiety-related abdominal colic, and trying to help with psychological problems of boys referred to me by the staff. The staff impress me with their knowledge of the family background of boys under stress and their sensitive appreciation of the problems.

My relationship with the headmaster and staff is good. I meet the headmaster and second master weekly and hear the main news of the school week, then lunch with them and guests who may be present—a pleasant way for me to feel part of the school and to be available for discussion. In the common-room I meet colleagues who tell me that Smith cannot read the board, Jones has awful headaches, and Brown is covered with spots. I am also expected to give advice about their own children whom I do not know and have never met, the menstrual irregularities of their wives, and the geriatric excesses of their parents-in-law. In return I am helped with my French (I have a daughter living in France), given new recipes (I like to try my hand at cooking), and, most important, am offered warm friendship by a group of professional people whose company I enjoy and whose knowledge I respect.

General practitioners as doctors to other schools will no doubt achieve more than I. Obviously those who are doctors to boarding schools and whose pupils are registered patients will have a closer relationship and have greater responsibility, but I suspect that there are few who enjoy the job more than I. For I am lucky that my relationship is founded on a broad base. I was happy as a pupil myself, as was my son, and I was invited to be school doctor when a few of those who taught me were still teaching. I have made good friends with colleagues whose interests lie outside medicine, and with other doctors doing the same job who are members of the Medical Officers of School Association. And I am stimulated and have pleasure in being amidst a thriving community of boys whose talents in music, drama, science, sports, and in many other activities never cease to astonish me.

Medical Records

History of our records

IAN TAIT

I think that medicine, for a learned profession, is sadly neglectful of its own history. A historical perspective often helps us to see why it is that things are as they are and indicates the direction in which it is right for us to move. The history of our records in general practice has much to teach us.

It sometimes seems that our present record system is assumed to be an inevitable fact of life and therefore unalterable. The truth is, of course, that it is the consequence of decisions, compromises, and chance events. It is not inevitable. It is bound to change, and we have to try to see how we got where we are and what we now have to do to achieve the kind of records we need. This article summarises the main events and influences that have created our present record. It also seeks to identify the main reasons for our apparent inability to introduce changes in our record-keeping system when these were seen to be required and will try to indicate what lessons the history of our records has to guide our efforts in the future.

Beginnings

We can trace the origins of our record system to Lloyd George's National Insurance Act of 1911. Under that Act the male working population between the ages of 16 and 70 were compulsorily insured. General practitioners were invited to provide medical services for insured patients. The Government realised the potential value of the statistical information about the health of the working population that might be made available as a result of the medical care given under the terms of the Act. For this reason the Act included a clause that imposed upon general practitioners who participated in the scheme an obligation "to keep such medical records as might be required of them under their conditions of service."

TIN BOXES

In 1913 a form of record was introduced for this statistical purpose. At the end of the year the doctor was required to return this record for analysis. For our purposes, the only interesting thing about this record is that tin boxes were provided in which to keep them. These records were in use until 1917, when they were given up as a temporary wartime measure. After the first world war the question of what kind of record should be kept by general practitioners had to be reconsidered. An advisory committee (the Rolleston Committee) was set up in 1920 with the following terms of reference:

"To consider and advise the Minister of Health and the Scottish Board of Health as to the form of medical record to be prescribed under the conditions of service for medical practitioners."

Aldeburgh, Suffolk
IAN TAIT, MB, FRCGP, general practitioner

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