tigation short of thoracotomy is most unlikely to detect the carcinoma. If the patient has had a haemoptysis and the chest film is apparently normal he probably does not have a carcinoma. Bronchoscopy is commonly done in such cases, but the yield of carcinomas is very small. It is a common practice to continue to take *x*-ray films in such patients for six months or a year after the haemoptysis, but again the yield is very small.

Chest radiography is an essential diagnostic tool; but there are limitations to what it can do in early diagnosis.

Bronchoscopy

Bronchoscopy is not a pleasant procedure for the patient. If it is done under local anaesthesia it is not an experience which many patients would willingly repeat; while even under general anaesthesia it has discomforts, particularly the upper abdominal pain that is relatively common after muscle relaxants have been used. These discomforts can be willingly accepted on behalf of the patient if the need is sufficiently great, but bronchoscopy is not a procedure that should be applied uncritically as a means of early diagnosis.

There are other shortcomings, such as the relatively small range of visibility in the segmental bronchi of the upper lobe, where small carcinomas may be bronchoscopically invisible. The procedure can be made more searching if suckings are taken from the suspected bronchi. It is quite out of the question to use bronchoscopy as a screening procedure similar to the examination of cervical smears in women.

Bronchography

This procedure, like bronchoscopy, is also uncomfortable and should not be used uncritically.

Carcinomas in segmental bronchi can sometimes be detected after bronchoscopy has shown no abnormality. No appearance is absolutely diagnostic, but the absence of filling in the involved area with good peripheral filling elsewhere is sometimes sufficient evidence to justify thoracotomy.

Cytology

Examination of sputum and bronchial secretions for tumour cells requires a high degree of skill and experience. If these are available the investigation can be of considerable value.

An attempt has been made to use sputum examination as a screening procedure. It is relatively simple to obtain the specimens, but to examine very large numbers of them by the present techniques is a formidable undertaking. The techniques will probably be improved in future. It may indeed be possible to devise automated methods of examination, which would make it possible for large numbers of specimens to be examined by relatively few and relatively unskilled people. Techniques for inducing sputum production are already available, and in association with automated reporting these might make it possible to examine the hundreds of thousands of specimens needed for a full screening programme.

The combination of regular chest *x*-ray and sputum examination of middle-aged men offers what is theoretically the best chance of early diagnosis; but a considerable amount of research is required before the yields of such a programme can be assessed against the economic cost.

Conclusions

With the existing diagnostic procedures early diagnosis is still largely a matter of chance. More patients would be diagnosed early if they sought advice earlier, but in many cases symptoms are so insidious and unobtrusive that the disease will inevitably be at an advanced stage before this occurs. The value of frequent routine chest *x*-rays has not yet been demonstrated. It is at present impracticable to carry out large-scale programmes of sputum examination, although suitable techniques for this may be developed.

For the present we must rely largely upon the clinical acumen of the general practitioners, whose task in early diagnosis is by no means easy, together with readily available and accurate chest *x*-ray services and the clinical acumen of physicians and surgeons in hospitals.

The yield from improvement in these factors will not be large. No major improvement can be expected until an efficient technique of mass detection has been devised.

The immediate outlook for improving early diagnosis is not good. Nor is the immediate outlook for improving the results of treatment. It is therefore all the more necessary to try harder to prevent this largely preventable disease, which is so difficult to detect in the early stages of its evolution.

ANY QUESTIONS?

We publish below a selection of questions and answers of general interest.

External Cardiac Massage

Q.—*In what sort of cases is external cardiac massage of value? What is the technique, and does this differ with the age of the patient?*

A.—External cardiac massage is indicated in any previously healthy individual who dies suddenly and unexpectedly. Most successes in resuscitation initiated by this technique can be expected to occur in patients with mild to moderately severe myocardial infarction—that is, in patients with apparently good prognosis and "hearts too good to die" but who nevertheless suffer electrical cardiac arrest in ventricular fibrillation.[1] Other indications are ventricular fibrillation induced by electric shock—either accidental or therapeutic (cardioversion), or by myocardial concussion as in bruising steering-column injury. I have had experience of successful resuscitation using this method in patients whose hearts have been arrested by barbiturate, quinidine, and accidental cyanide poisoning. Then there is the historical indication which still holds to-day, of cardiac arrest during anaesthesia when resuscitative measures will be initiated by external massage, especially if the chest or the abdomen is not already open.

Lightning speed in beginning is most important. The praecordium should first be struck by a heavy blow with the clenched fist, which may in itself reverse ventricular fibrillation or asystole.[2] Immediately after cardiac compression has begun the patient should be laid on a firm surface (on the floor or on bed-boards). The operator should kneel beside or astride the patient's abdomen and place the heel of his hand on the lower third of the patient's sternum, fingers pointing to the neck, and press down from the shoulder in a slightly crescendo jerky fashion so that the sternum moves inwards ½ to ¾ in. (1.3 to 1.9 cm.) about 80 times per minute. Very little force is required, but the operator may find it less tiring to place one hand on top of the other and bear down from both shoulders.[3] Efficacy is judged by contraction of the pupils, resumption of skin circulation, and a clinical impression that the patient is not inanimate. A femoral pulse is not definite evidence of adequate circulatory forward flow.[4]

Attention should be paid to the airway, and if respiration has ceased intermittent

positive pressure breathing (I.P.P.B.) must be instituted by the direct mouth-to-mouth technique, Brook airway, or even intubation and mechanical respiration. External cardiac compression does not provide a fully satisfactory circulation and metabolic acidosis rapidly develops. Adequate oxygenation of the myocardium and correction of acidosis are essential if the heart is to be expected to resume normal rhythm either spontaneously (very occasionally)[5] or by electrical defibrillation (usually external D.C. shock).[6] The treatment of cardiac arrest in acute myocardial infarction was discussed recently in the *B.M.J.*[7]

I am not aware of any difference in technique related to the patient's age. Cardiac arrest in children is usually a complication of anaesthesia or of cardiac catheterization. Much lighter compression on the sternum is required in children to support a circulation. In emphysematous subjects it is unlikely that the technique will be successful.

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Doubtful State of Immunity

Q.—*Children coming to a residential school for the first time frequently have records of inadequate immunizations. Bizarre histories are given and often there are no records at all. What should be done to ensure that every child at the school is properly protected against diphtheria, tetanus, and poliomyelitis?*

A.—The parents of a substantial proportion of schoolchildren have no recollection and no records of the immunizations their children have received in the past. Only a few will admit this, and others are prepared to hazard a quick guess.

The Schick test provides a simple, reliable, and acceptable method of identifying the diphtheria-immune children from the non-immune. All entrants to a residential school should be tested. Schick-negative children require no further immunization. Schick-positive pupils who have been previously immunized will require a single dose of diphtheria toxoid, and those with no history of diphtheria immunization should start on a primary immunizing course consisting of two doses of diphtheria toxoid.

If there is any doubt whether a child has been previously immunized against tetanus or poliomyelitis he should be given two doses of tetanus toxoid or be fed three times with oral poliomyelitis vaccine, as the case may be. It is hardly justifiable to obtain serum for antibody titration before embarking on a primary immunizing course. Proper records of the immunizations should be kept and the parents and the children should be told what has been given.

Giardiasis in a Family

Q.—*If one member of a family is infected with Giardia lamblia should the other members be treated? Is it safe to give mepacrine repeatedly in cases of relapse in children, and is it beneficial to combine phthalyl-sulphathiazole with mepacrine?*

A.—Infection with *Giardia lamblia* certainly tends to be found among persons in the same household, and especially in the younger members of the family. Although cysts tend to be excreted intermittently in the stools, a search should be made by examining several specimens and treatment given to all in whom the parasite is found. If such examinations are not practicable then possibly all members of the family should be treated blindly.

A normal course of treatment with mepacrine for an adult consists of 100 mg. three times a day for 10 days, the dose being proportionately less for children. A cure rate of 80% may be expected as a result of such a regimen. Should this not be successful, metronidazole 500 mg. might be administered daily for seven days. There is no indication that additional phthalyl-sulphathiazole is beneficial.

Transmission of Infectious Hepatitis

Q.—*Should clothes and other articles that have been in contact with a patient in the infectious stage of infectious hepatitis be disinfected, and, if so, how? Can a person in attendance on a patient with infectious hepatitis, and who does not develop the disease, transmit the infection to others?*

A.—On epidemiological grounds and from its faecal–oral mode of transmission infectious hepatitis is regarded as an enterovirus infection, but growth of the causative virus *in vitro* has not been satisfactorily established, so that detailed studies of its physical properties, including its rate of inactivation, have not been done. However, viruses in general are labile particles unless stored at low temperature.

Therefore, unless clothes are obviously contaminated—for example, with excreta, when autoclaving is to be recommended—the ordinary processes of laundering, airing, and storage should be adequate for virus inactivation. Any articles used by the patient, such as food utensils, should be handled with care and not used by others. Washing such articles in very hot soapy water followed by thorough rinsing should inactivate or dilute out infectious particles.

Some persons infected with enteroviruses develop only an inapparent infection, although they may excrete virus just as much as those with overt disease. It is therefore quite possible for a person in attendance on a patient with infectious hepatitis to be suffering from an inapparent form of the disease at the time and to be capable of infecting others who are close contacts.

Contact Lenses and Young Myopics

Q.—*Is there any evidence to support a claim that if young myopics wear contact lenses it will prevent or retard the usual increase of myopia in adolescence?*

A.—Arrest of myopia in 31% of young people wearing contact lenses, compared with 10% in a group of controls, was reported by Kelly and Butler.[1] A longer follow-up period and a more satisfactory control series will be required to substantiate this preliminary report.

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Notes and Comments

Depression with Oral Contraceptives.—Dr. T. S. DAVIES (Llanfrechfa Grange Hospital, Cwmbran, Monmouthshire) writes: In the reply to this question ("Any Questions?" 11 December, p. 1416) your expert mentions that while a small number of patients may be depressed others experience a sense of well-being.

Estimations of serum protein-bound iodine were carried out in June on seven physically healthy women before Ovulen (ethynodiol acetate + mestranol) was prescribed, and again in November after they had been on Ovulen for five months (see Table).

Case No.	Age	Serum Protein-bound Iodine	
		June	November
1	33	6·4 micrograms %	7·3 micrograms %
2	32	5·6 " "	5·8 " "
3	42	5·7 " "	9·5 " "
4	19	7·8 " "	9·0 " "
5	43	8·2 " "	11·6 " "
6	37	7·5 " "	12·2 " "
7	32	7·0 " "	4·0 " "

The only case (No. 7) which did not show a rise in protein-bound iodine was in a patient who was being treated concurrently with a potent phenothiazine tranquillizer, pericyazine, and this may have had a depressive effect on the protein-bound iodine. Similar rises in protein-bound iodine following the use of oral contraceptives have been reported by Florsheim and Faircloth.[1] It may be that this sense of well-being is related to the rise in protein-bound iodine levels.

OUR EXPERT replies: Roman and Bockner[2] consider this increase in protein-bound iodine found with oral contraceptives to be similar to the increase found in normal pregnancy, and this is generally considered to be an oestrogenic effect.[3 4] Little seems to be known of the effect of progesterone on thyroid activity, though my clinical impression is that depression is more likely with the more strongly progestational of the oral contraceptive products, and that it can sometimes be relieved by changing to a more oestrogenic one. It would certainly be interesting to see whether these effects are related to any alteration in the protein-bound iodine levels.

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