recorded by Hartfall, Garland, and Goldie (1937). Our case of agranulocytosis (Ellman and Lawrence, 1935) was unfortunately fatal: purpura haemorrhagica was also present. We have not had any further case of this type since adopting the above-mentioned principle of using great caution when the blood sedimentation rate has become normal. Albuminuria was often met with when the larger doses were employed. It proved transient, and was not associated with other evidence of kidney damage. It was not considered an indication for stopping the treatment.

Discussion

The results provide definite evidence of the ability of aurothioglucose to alter favourably the course of the disease in cases of rheumatoid arthritis. Our observations of course refer to results at the end of nine months' observation. We have so far no evidence as to the relapse rate, as cases have not been followed up for more than a year or two after completion of treatment. Recurrence has, however, not been encountered among patients in whom the disease has been rendered completely inactive. We have had several relapses in patients who abandoned treatment while the disease still showed signs of activity.

In the absence of similar proof for other methods we therefore recommend the adoption of this treatment as a routine for all cases in which the disease shows evidence of a progressive course. Prolonged observation of these cases before instituting gold therapy, in the hope that spontaneous remission may occur, is not considered advisable, as permanent destruction of cartilage may result and complete restoration to normal will then be impossible. General constitutional, physical, and orthopaedic treatment, together with specific occupational therapy where possible, should of course be combined with the gold treatment in order to restore the maximal functional efficiency to the joints.

With regard to dosage, this is a difficult point to decide. The weekly dose of 0.1 gramme used by most workers nowadays has the advantage of causing fewer toxic effects. On the other hand, a dose of 0.2 gramme weekly will cure a larger proportion of cases, but produces toxic effects more readily. We consider that the most suitable dosage is still undecided.

Summary

A series of ninety typical cases of rheumatoid arthritis were divided into three equal groups. One group was used as a control, while the other two were treated with large and small doses of gold respectively.

Pain, limitation of movement, periarticular swelling, blood sedimentation rate, and radiographic signs have been studied in each group.

From the data obtained from these three groups at the end of nine months' treatment statistical evidence of the value of aurothioglucose (solganal B) in the treatment of rheumatoid arthritis is produced.

Suggestions are brought forward as to a method of reducing the frequency of toxic effects resulting from the gold compound.

We wish to express our thanks to Dr. Allen Daley, Chief Medical Officer of the London County Council, and Dr. Sandiland, Medical Superintendent of St. Stephen's Hospital, for giving us facilities to enable this work to be carried out; also to Sir Leonard Hill and Professor R. Fraser for their kind help and criticism.

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WARTIME PRECAUTIONS FOR DIABETICS

BY

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In a country where air raids are daily events and invasion a possibility diabetics are liable to special dangers, against which they should be warned and forearmed. Mild cases not on insulin are in no real danger, as neither starvation nor departure from proper diet for a day or two is of grave consequence. But it must be clearly understood that most insulin cases owe their health entirely to regular daily injections and that it is not safe to stop them. True, some diabetics who need only small doses (under 20 units a day) can miss insulin for a few days without danger, although of course sugar would almost certainly recur. But more severe cases depending on larger doses—30 to 60 or more units a day—may get into serious trouble from missing even one dose, and to miss two or three doses would certainly be dangerous. Sugar returns as soon as the insulin action is exhausted, even if no food is eaten; acetone bodies rapidly follow, and coma from ketosis may result within a day or two. A second danger is that hypoglycaemia may occur if adequate carbohydrate is not available or is not eaten to balance the insulin, and it might come on with protamine-insulin the following night if supper was omitted. The following advice and precautions on various difficulties are therefore given.

Routine Precautions

Diabetics can rest assured about the stocks of insulin in this country; these are enough for two years, and fresh supplies are being made, as before the war, by British manufacturers. But circumstances might arise in which its local distribution would be temporarily upset, and I should advise insulin patients to have a month's supply in hand. Most diabetics who buy their own insulin have already seen to this, and I hope doctors will arrange that insured cases have a reserve. Many doctors have been in the habit of prescribing a month's supply for their panel patients, and the prescription of a small reserve is quite in order and should be done.

It is wise for all diabetics to carry insulin and a syringe with them whenever there is the slightest possibility that they may not get back home at the time planned for the next injection. Every diabetic who travels or works away from home should certainly do this. Diabetics should also carry a small supply of carbohydrate, such as sugar, chocolate, biscuits, in their pockets, so that if the regular timing of meals is upset enough carbohydrate can be eaten to balance the insulin and prevent hypoglycaemia.

It is essential also that every insulin patient should carry on his person the information that he is a diabetic taking insulin. This has always been advised in peacetime, but is much more important now. Imagine what would happen after an air raid injury to any severe insulin patient with no such information on his person. A suitable card is provided by the Diabetic Association, 124, Baker Street, London, W.1, and this or something similar should be carried inside the national identity card. It should state the kind and dose of insulin in units and the amount of carbohydrate per day, and the patient's usual doctor or hospital he attends. Any diabetic who neglects this runs the gravest risk.

Enforced Omission of Insulin or Food

If a diabetic cannot get his usual insulin, it is best for him, as a general rule, to continue to eat his usual carbohydrate but no fat and only a little protein. This proce-

ture is more likely to minimize ketosis than is complete starvation. A return to *insulin* and the usual diet should be made *as soon as possible*, and as an emergency is likely to arise the situation should be reported to a doctor. Extra doses of insulin may be necessary to re-establish the previous state of health, and some patients may require frequent doses of insulin and carbohydrate (perhaps four-hourly) to rescue them from serious ketosis.

If a person's insulin supplies are running short it would probably be fairly safe for a few days to economize by taking half the usual dose with the usual diet, except that *no fat* should be eaten. More value will be got out of a limited amount of soluble insulin given in three or four small doses than if it is given in one or two bigger doses per day—for instance, 10 units eight-hourly has a better effect than 30 units once a day. This does not apply to protamine-insulin, and is one advantage of the latter.

Many diabetics are very conservative about the brand of insulin they use, but they should realize that these are all the same, and should not hesitate to use any brand (that is, A.B., Boots, B.W.) if they cannot obtain temporarily their usual one. Also they may have to use a different strength of insulin for the time being—perhaps 20 units per c.cm. strength instead of 40 units per c.cm.

If insulin is available but for any reason no carbohydrate food can be got to balance it another problem arises, because the usual dose of insulin without food would cause hypoglycaemia, and the complete omission of insulin would allow ketosis and coma to develop. As a general rule a subject of severe diabetes should take one-half (certainly one-third) of the usual dose of insulin without food. It is unlikely that food would be lacking for long, and as soon as available the usual meal and insulin should be taken, or only a half-dose of insulin if within six hours of the previous half-dose.

PHRENICO-COSTAL SINUS PNEUMONIA

BY

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By "phrenico-costal sinus pneumonia" is meant a peculiar condition of the lateral portion of that part of the base of the lung which enters the phrenico-costal sinus of the pleura on deep inspiration. It will be remembered that during expiration the base of the lung reaches only the eighth rib in the mid-axillary line. During deep inspiration the base moves freely downwards but does not reach the tip of the phrenico-costal sinus. Many muscular efforts are made with the breath held in full inspiration—that is, with this part of the lung fixed in the phrenico-costal sinus. The portion of the lung thus fixed may be

Diagram showing part of lung affected and the mechanism of production.

"caught in a pincers movement" consisting, on the right side, of the elbow and liver and, on the left, of the elbow and the spleen (see accompanying diagram, in which these forces are indicated by arrows and the part of the lung involved is shaded black).

Although this condition does not appear to have been reported previously it is probable that it is not infrequent. In the first two cases here recorded healthy men sustained a relatively trivial but peculiar injury. Their accidents were similar and were well described, and there can be no reasonable doubt that the accident was the cause of the lung condition found later. The second two cases show the same lesion in delirious patients, in whom it is probable that a similar injury took place but was not observed. No great degree of violence is needed to produce the condition. The fifth case is an air raid fatality.

Case 1.—This patient was a well-developed healthy man aged 49, weighing about 12 stone. While having his lunch at work on June 23, 1937, some boys kicked a football near him. He got up and gave it a kick to send it back, but in so doing he tripped over a heap of iron castings and came down on his right side with his elbow in by the side of his chest. The shop ambulance man dressed the elbow and sent him to the hospital, where two sutures were inserted just above the elbow. The patient then resumed work. On the 25th the ambulance man noticed he was sitting down, so he went to him "and found he was in a semiconscious condition." He was taken to the first-aid room, where he "started to groan and complain of pain in the right shoulder and down the right side." He then coughed up some blood and was again taken to the hospital, where he died from acute pulmonary oedema six hours after admission. At the post-mortem examination the injuries above the right elbow laterally were noted; there were multiple abrasions, and a deep wound was closed with two silk-worm-gut sutures. There was no sign of infection, and the axillary glands were not enlarged. The heart weighed 12 oz. Except for slight dilatation it was perfectly normal; there was no valvular or coronary disease. The blood was dark and fluid. The air passages were filled with deeply blood-stained froth; a similar fluid poured from the cut surface of the lung. The lateral part of the base of the right lung (in a position corresponding with the arm injury) showed a peculiar wedge-shaped consolidation. This was very much harder than the hepatization of pneumonia, and was cyanotic, with a dry cut surface; the edges were very sharp all around and stood up from the rest of the lung. Sections revealed that there had been free haemorrhage into this part of the lung. Some phagocytic cells laden with haemosiderin granules were observed among the red cells, but most of the erythrocytes were well preserved. There was no relative increase in white cells, but some of the bronchi had many polymorphonuclear leucocytes in their lumen. The pleura over this solid part showed a light fibrinous exudate; elsewhere it was shiny. There was a large blood-stained exudate in the right pleural cavity, but the left side was clear. The phrenico-costal sinus was normally deep on the right; on the left it was obliterated by old adhesions. There was no significant lesion in the abdomen or the brain.

Case 2.—The second instance of this condition was that of a man aged 55 who on May 24, 1939, slipped at work while carrying a heavy object with another workman. He came down on his left side and "strained" his lower left chest; because of this he had to sit down for a time. He then resumed work and carried on for several days, despite his "strain." He then had to visit his doctor, who strapped his lower left chest and sent him to bed. He appeared to be making good progress until, quite unexpectedly, he suddenly collapsed and died on the seventh day after the accident. At the post-mortem examination it was noted that the left leg was moderately swollen because of a femoral thrombophlebitis. Clot from this had become detached and had caused his death by pulmonary embolism. The clot embolus was 20 cm. long and passed from the right ventricle into the right branch of the pulmonary artery, where it turned sharply across to enter the left pulmonary artery. The heart was moderately dilated and hypertrophied; it weighed 15 oz. There was no valvular disease, but moderate coronary arteriosclerosis was present. Except for the clot described the content of the heart was dark fluid blood. The left pleural cavity revealed an effusion of about one pint of blood-stained fluid; the right had no exudate, but there were some old adhesions. Both lungs showed some oedema. At the lower