When I saw her the breast was atrophied and the nipple had disappeared. There was a large sloughing nodular ulcer with irregular edges, measuring 8 by 5 cm., over the breast. Numerous hard lumps above and below were present, with enlarged glands in the axilla and supraclavicular region. Radium was applied without lead to the ulcer, and through 1 mm. lead all over for about forty-eight hours. This relieved the pain, and the discharge and haemorrhage, which had been profuse, nearly ceased. The improvement was so great that a month later the patient herself asked for a further course of treatment. By then the nodules on the ulcer had almost entirely disappeared, the surface was clean, and it was 1 cm. in diameter smaller. New skin had commenced to grow round the edges. The surrounding growths and glands had also diminished. Unfortunately, during the second course of treatment an acute attack of pleurisy, probably of a septic nature, set in, and she died after a three days' illness. The last two months of her life, however, were at least made tolerable.

In the treatment of these cases I have followed the originators of the method in using lead screens. Recently for growths in or immediately under the skin I have employed another method which I think acts as well and saves valuable time. It consists in placing the applicator either without lead or with a thin lead screen, at some distance, $\frac{1}{2}$ in. or more, away from the skin. As the rays are divergent a much larger area, about four times the size of the applicator itself, can now be irradiated by the more penetrating and effective of the rays, the softer and skin-damaging rays being cut off by the air space and layers of lint or cotton-wool. In deeply-seated growths the radium must be placed on the skin, if it is intact, so as to be as near to the tumour as possible, and the skin must then be protected by lead, 2 or 3 mm. thick, to prevent damage from the prolonged exposures required. In these cases, however, there is no doubt that much better results are obtained by burying the radium in the substance of the tumour. I have found no benefit result in the few cases in which radium emanations have been employed, or in which radium bromide has been given internally. In all my cases α rays have been applied to the surrounding parts in addition to the radium treatments.

There is no doubt that some varieties of cancer are much more responsive to radium than others. With few exceptions it is in the slow-growing cases that it acts best, and in which a diminution in size may be expected. Unfortunately we have no statistics of the number of cases in which it fails. That failure occurs not infrequently even in those treated on the Continent with large quantities of radium is well known. We know also that it does not always cure the comparatively benign rodent ulcer or prevent its recurrence. I have seen a rodent reappear as late as three years after its apparent cure by radium. As my earliest successful case of cancer was treated only eighteen months ago, it is too soon to speak of the ultimate result. Recently Nahmmacher² reported a case of carcinoma with no recurrence as late as three years after radium treatment.

At present the position of radium-therapy seems to be that while it is of undoubted value in many cases, its chief function is in aiding and not in excluding the other recognized methods of treatment. Until it can be proved that relapse and metastasis are not more common after regression from radium than after excision, the method must be reserved for those cases in which operation is contraindicated and for recurrences.

Apart from the question of the curative effect of radium, there is one point of practical importance which deserves attention. It is that in the cases in which radium acts beneficially it acts at once. Within fourteen days of the beginning of the treatment an unquestionable diminution in size will be found in all cases in which radium is able to exert a regressive effect. Occasionally this decrease is seen as early as the third or fourth day. If no improvement is apparent in this time further treatment is useless, except, perhaps, for its palliative effect.

There appears to be no other certain means of foretelling in the individual case the result of radium treatment, and I have found this test application very useful in determining the advisability of a prolonged and necessarily expensive course of treatment. It will be of still greater value, if radium fulfils expectations and its results are found to be permanent, in deciding the question of operation.

REFERENCES.

¹ BRITISH MEDICAL JOURNAL, August 21st, 1909, p. 444. ² *Wien. med. Klin.*, No. 32, 1910.

CURATIVE INFLUENCE OF ROENTGEN RAYS
IN MALARIA.

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THE influence of the Roentgen rays in changing the pathological conditions in certain diseases (such as leucocythaemia and lupus) gave one of us the idea that the application of α rays over the spleen should have some beneficial effect in cases of malarial fever, where one of the most distressing symptoms is the pain caused by engorgement of the spleen. It was thought that the rays might have some action upon the malaria parasite either directly on the parasite or indirectly by causing changes within the blood which should destroy the parasite.

It seemed not unlikely that the blood changes which are known to be induced within the body after exposure to α rays would stimulate the leucocytes to destroy the parasite, or that the altered serum would act in such a manner as to make the continued action of the parasite impossible.

The effect of heat applied over the splenic area in relieving the pain attendant upon an attack of malarial fever gave the idea that α rays also might have a therapeutic action as the immediate effect of their similar application.

That these conjectures were not without base is evidenced by the following cases:

A. Cases of Malarial Fevers.

CASE I.—Lance-Corporal S., 1st Royal Munster Fusiliers, admitted with a temperature of 104°; B.T.; spleen slightly enlarged and tender. For two days morning temperature rose to 104°. Had quinine by the mouth with no result; exposure five minutes. Temperature dropped to 97° with no subsequent rise, and the pain and tumour disappeared.

CASE II.—Private H., 91st Battery, R.F.A.; B.T.; temperature on admission 104°; some enlargement of spleen with tenderness in the region. No quinine. Exposure five minutes. Temperature became subnormal, pain and tumour disappeared, no subsequent rise.

CASE III.—Gunner W., 91st Battery R.F.A.; B.T. On admission temperature was 104°. He was put on quinine by the mouth. Temperature rose to 104° next day, and on the next to 104.4°. His spleen was slightly enlarged and tender on pressure, which persisted. Exposure five minutes on third morning. Temperature dropped to subnormal, and pain and enlargement disappeared.

CASE IV.—Lance-Corporal P., 2nd North Stafford Regiment; B.T. On admission temperature 103°; the spleen was enlarged 2 in. below costal margin, and painful. Exposure five minutes. The pain was relieved immediately, and the enlargement was lessened; temperature dropped to subnormal. The next morning there was a slight rise of temperature. Exposure three minutes. Enlargement of spleen disappeared totally, and temperature dropped to normal. No further rise. Convalescent. No quinine.

CASE V.—Sergeant H., 1st Royal Warwick Regiment; B.T.; admitted having had ague the day before. Temperature normal. Spleen enlarged 2 in. below costal margin; very painful. Exposure five minutes. The enlargement and pain disappeared and temperature remained normal without any further rise. No return of pain. Convalescent. No quinine.

B. Cases of "Peshawar" Fever.

CASE VI.—Gunner B., 86th Battery, Royal Garrison Artillery; B.T.; admitted collapsed. Haemorrhage from the bowels; temperature normal; spleen not enlarged. Exposure five minutes. No return of haemorrhage; temperature remains about 98°. No quinine.

CASE VII.—Private McS., 1st Royal Munster Fusiliers; B.T.; admitted in collapsed condition. Haemorrhage from bowel; temperature 99°. Exposure five minutes. No return of haemorrhage. On the second day the temperature rose to 101°. Given exposure of three minutes every day. On the fourth day temperature normal, with no haemorrhage during this time. No quinine.

C. Malaria with Cerebral Symptoms.

CASE VIII.—Private K., 1st Royal Munster Fusiliers, admitted with B.T.; temperature 104.8°; collapsed. No haemorrhage, no enlargement of spleen; mental type. Had one injection of quinine on second morning, and quinine by the mouth on the third and fourth. No satisfactory results; temperature still remained high, and the mental symptoms persisted. Exposure of five minutes on morning of fifth day. Temperature became normal, pulse improved, patient became brighter. No further rise of temperature.

D. Miscellaneous.

CASE IX.—Sergeant C., 1st Royal Munster Fusiliers; second admission for M. T.; temperature 103°. Quinine given at first and discontinued when spleen was found enlarged 2 in. below costal margin; hard on palpation, with well-defined border; painful. Exposure five minutes on two consecutive days. Result: Immediate relief of pain and disappearance of enlargement; temperature dropped to subnormal after second day; no further rise in temperature; convalescent.

CASE X.—Gunner P., 91st Battery R. F. A.; admitted with B. T.; temperature 100°. Complaining of dragging pain in the splenic region; spleen enlarged below costal margin. Exposure three minutes. Immediate relief of pain; disappearance of splenic tumour; temperature dropped to subnormal, no further rise; convalescent.

CASE XI.—Bombardier L., 91st Battery R. F. A.; admitted with B. T.; temperature 100°. Complained of dragging pain in region of spleen; spleen enlarged 1 in. below costal margin. Exposure three minutes; relief of pain; disappearance of splenic tumour; temperature dropped to subnormal, no further rise; convalescent.

REMARKS.

Our experience has been that the application of α rays in cases of malarial fever relieves splenic pain and reduces recent engorgement; that the temperature falls and does not usually rise again; and that recovery is not attended by the anaemia usually present in cases treated with quinine. We have not had to fall back upon quinine in cases treated by the α rays, while we have had cases which resisted quinine and yielded promptly to the rays (quinine being discontinued).

We have 5 cases (natives) of chronic induration of spleen (malarial) under treatment, but the progress made has not been sufficiently marked to enable us to make any definite statement as to the special value of α rays in such cases. But we are so impressed with the results in malarial fever cases that we have prepared this record in the hope that our experiences may be obtained by others, and on a more extended scale.

THYROID EXTRACT IN CARCINOMA.

BY

E. HUGHES JONES, M.D.,

RHYL.

ALTHOUGH organo-therapy in some form or another has existed from most ancient times, even amongst savages, the method as at present practised is of recent origin, and of all extracts thyroid gland is still the most successfully used, and for certain conditions, such as myxoedema and certain forms of goitre, a specific, even more so than potassium iodide for syphilis or the salicylates for rheumatism. There are many other conditions in which the gland has been more or less successfully employed, though perhaps without definite specific action—for instance, oedema, psoriasis, uterine fibroid, some forms of retarded development in children, and many other cases associated with defective metabolic processes—which is well illustrated by the following most striking case of multiple carcinoma of the skin and subcutaneous tissue. I am aware that this is only a single instance, but the result was so gratifying that a record of the notes of the case may prove interesting.

The patient, a widow aged 61, gave the following history: In November, 1899, she had a large pimple in the right axilla, and at the same time two nodules below the skin on the left side of the chest in the axillary line. The latter seem to have disappeared after the application of some ointment. The lump under the right axilla, however, continued to grow, until it attained the size of an ordinary marble, of a dark purple colour, and at times this was very painful. At this period the general health remained good, apart from an occasional feeling of extreme cold associated with a greenish pallor of the face. The lump under the right axilla became so large and painful that in June, 1900, she went to see Mr. Robert Jones, of Liverpool, who advised immediate operation. This was done. In October of the same year she again consulted him for a growth under her left breast. She was urged to go again in a fortnight, to have this also removed, but, as in the meantime another growth occurred in the left side of the upper part of the abdomen, the patient was discouraged and did not go. During the months that followed several other fresh growths appeared under the skin, two on the right side of the chest, one on the front of the chest above the breast, two on the left side of the chest, and last of all one under the right armpit. This made eight growths in all, varying in size from a walnut to a Tangerine orange.

By this time her general health was suffering severely. I saw her in June, 1901, and found the growths as above described. The growth in the right axilla was the largest of all, fixed and painful, and was the size of a tennis ball; it prevented the arm from being brought to the side, and had recurred at the site of the scar of the previous operation performed by Mr. Robert Jones (in June, 1900). The other growths were smaller, about the size of filberts and walnuts. They were not painful, but were tender on pressure and hard to the touch, and seemed characteristic of scirrhus cancer.

The larger growth (axillary) was to all appearances not far from ulceration and breaking down. The patient appeared to be very anaemic, having a sallow greenish-yellow colour; her pulse and respiration were quickened, and her temperature varied from about 99° to 101°. Sickness was frequent; the appetite was very poor—she was scarcely able to retain anything. The patient had lost 3 st. in weight.

As she had been operated on twelve months previously, with the unfortunate result mentioned, and owing to the dissemination of the growth and her feeble state of health, it was useless to suggest further operative interference, so I decided to try the effect of thyroid medication. Owing to her enfeebled state of health I administered tabloids of thyroid gland with extreme caution, starting with grains v daily, gradually increasing the dose to grains x, and finally to grains xv daily.

To my surprise the patient quickly showed signs of improvement; the palpitation, sickness, and emaciation gradually disappeared *pari passu* with the gradual disappearance of the growths. At the end of August, 1901, the growths had entirely disappeared, the patient was practically well and had recovered her lost weight of 3 st., and up to the present date is quite well, not having suffered in any way from them since. I was so gratified with this result that I almost doubted the nature of these growths, so I wrote to Mr. Robert Jones of Liverpool, in December, 1903, for his opinion of the growth he had removed in 1900. The following is his answer to my inquiry:

It was unquestionably a carcinoma, although I cannot quite recollect any of the pathological details. It was examined by a couple of men besides myself. Some time later there seemed to be a recurrence of the growth trouble, and I recommended removal of the lump. However, she would not agree to that, and I have often wondered what happened to it. This was some years ago; can you let me know in what spot the growth has recurred? Is it in the neighbourhood of the scar, which you will find in the fold of the axilla, or is it in the breast tissue?

After reviewing the results of thyroid administration obtained by other observers, much less after the result in the case I have just recorded, any impartial observer must conclude that thyroid organo-therapy cannot in any sense supersede the well-recognized methods of surgical procedure in operable carcinoma. The free removal of the growth during the operable stage must stand as the soundest and most hopeful measure of curative treatment. When, however, complete radical treatment is out of the question, and when operative measures are refused by the patient, even in the operable stage, thyroid administration offers some hope of checking the rapidity of the growth, favouring spontaneous cure, and possibly achieving the slow but absolute disappearance of the growth.

There are now on record a number of well-authenticated cases of carcinoma, in addition to my own case, which have to all appearance entirely disappeared under the administration of thyroid extract. Their numbers are not great, but they are sufficiently striking to lead me to conclude that the association of thyroid administration with the cure is more than a mere coincidence.

A still larger number of cases of carcinoma have been recorded where thyroid administration was followed by disappearance of secondary nodules, increase of weight, loss of pain, and other signs of marked local and general improvement, but not complete cure of the growth. In these cases treated by thyroid there appeared to be established a negative phase of growth in the neoplasm, during which the nodules or mass ceased to grow—or retrogressed—and in many cases underwent a spontaneous cure.

Many of the cases which were thus favourably influenced by organo-therapy had double oöphorectomy performed previous to the administration of this animal extract. Double oöphorectomy found its great advocate in Beatson, and was applied particularly to women below the menopause. Beatson, supported by other observers, such as Herman, Stiles, Chicken, McAdam Eccles, and