Observations

ON

THE TREATMENT OF RODENT ULCERS

BY

N. S. FINZI, M.B., D.M.R.E.

MEDICAL OFFICER TO X-RAY DEPARTMENT, ST. BARTHOLOMEW'S
HOSPITAL

"Rodent ulcer" is the term we use for basal-celled epithelioma of the appendages of the skin. It is locally malignant, but never, or practically never, spreads to the lymphatic glands while it still remains a basal-celled epithelioma. In its later stages, however, whether it spreads or not, it tends to become a true squamous epithelioma, and though even then it shows little tendency to spread to the lymphatic glands, it does occasionally do so. Its commonest site is on the face, especially the inner canthus, the nose, or the cheek, but it may occur in any part of the body. Usually a single lesion, it is occasionally multiple. I have one patient who has had six separate primary sites in various parts of the body, one of which became epitheliomatous. She has recently developed four more. She has also had a separate squamous epithelioma of the vulva. All these have been treated successfully with radium. I have also had a case of multiple rodent ulcers which were successfully treated with radium, but the patient developed a carcinoma of the oesophagus, a squamous epithelioma which eventually killed him. The life history of a rodent ulcer varies greatly. It will very often heal temporarily, and sometimes remain healed for years with very little evidence that it has been there, but almost always it will eventually spread. It may advance only slowly for years and then go ahead rapidly. In other cases it may grow fairly rapidly from the start. It may or may not ulcerate; when it does, there is often a tendency for it to heal up at times and break down again.

DIAGNOSIS

The typical appearance is a central smooth area, which may be scar or apparently normal tissue, with a raised, characteristic-looking, thickened edge (the "rolled" edge). The central part, instead of being a scar, is very often an ulcer. Occasionally there is merely a soft raised growth, reddish and semi-translucent, and also quite typical in appearance. Either of these varieties may be completely epithelialized over. In another form, which is particularly apt to occur on the temple, there is a serpiginous ulceration with scarring where it has healed. Generally some portion of this shows the typical rolled edge. In certain situations a growth, almost typically a rodent in appearance, is almost always an epithelioma: these are on the ear, especially on the upper part of the pinna, on the upper edge of the tarsal plate of the lower eyelid, and sometimes on the lower edge of the ala nasi. If sections are taken of these, they show squamous epithelioma; as this is of a type which very rarely spreads to the glands, its treatment is similar to, though more drastic than, that of rodent ulcer. It is occasionally, though rarely, difficult to distinguish a very early rodent from a wart, and this is important because the treatment is not quite the same. Warts, however, are usually multiple and only rarely single. If there is any doubt, the growth should be treated as a rodent.

CHOICE OF METHOD

Surgery.—An early rodent can be excised with the cold knife or with cutting diathermy, and very often the result is quite satisfactory, but the proportion of recurrences is large unless the excision goes very wide of the

growth. The resulting scar is, of course, not inconsiderable, and, anyhow, the cosmetic result cannot be compared with that following radium treatment. If a rodent is excised and recurs, its subsequent treatment with radium or x rays is always more difficult and less certain than is the case when it is treated *ab initio*. Even more so is this true if recurrences have been excised one or more times. Treatment of the scar by radium after an excision will usually prevent recurrence, but one loses the advantage of freedom from scarring that one gets from such radium treatment as is described below. The only advantage that can be urged for surgery is that one can have a microscopical examination of the specimen. At the present day this method of treatment has been superseded. In the early stages a biopsy often means excision of the whole growth, and in a typical case there seems no object in excising a portion, especially as radium treatment is made more difficult thereby. When there is doubt a biopsy may sometimes be advisable, especially if epithelioma is suspected. In advanced cases the position is different. Here an extensive and courageous operation with coagulating and cutting diathermy followed by a plastic repair may be successful.

Caustics.—Carbon dioxide snow has been used, and has occasionally cured a case, but on the whole its use is most unsatisfactory. It is a painful method and produces considerable scarring, while the proportion of failures is far too great to make it permissible to use it. Other caustic methods—except diathermy—have even less to commend them. It may be mentioned that a rodent ulcer has occasionally been stirred up by the use of caustics, especially silver nitrate, and has commenced to grow rapidly from that time. Diathermic coagulation has some of the disadvantages of surgery, but it is a quick method, and may be most valuable in really experienced hands.

X rays.—As I gave up the use of these in favour of the γ rays of radium more than twenty years ago, I have no experience of the use of modern methods in ordinary cases. From the results in late cases that have become epitheliomatous I am inclined to think that better results will almost always be secured with radium.

Radium.—The most important thing about the radium treatment of rodent ulcers is *not to use unfiltered or lightly screened radium radiations*. It is true that the majority heal up, and a proportion—perhaps the majority—remain well, but a large number recur, or sometimes even fail to heal. When they recur after such treatment they are not so easy to heal as new cases, and when they recur after several times being healed by such methods they become very refractory to radiations and require very severe methods. I am afraid that those who employ unfiltered radiations do not follow up their cases properly, as I see a number of such patients who, after several recurrences, come for more efficient treatment. Unfortunately some that I see after years of bad treatment have become epitheliomatous and are sometimes incurable. In early rodents one should get some 99 per cent. of successful results by simple methods, and the other 1 per cent. can often be treated by more severe radium irradiation. The minimum filtration should be 0.3 mm. of platinum, and 0.5 mm. is better even for early cases. For advanced cases 1 mm. or even 2 mm. platinum may need to be used.

RADIUM TREATMENT

Early Cases.—In principle, the method I advocate is: (1) To give a mild erythema dose of filtered radium γ rays to the whole of the affected area. (2) To repeat this dose after six weeks if any naked-eye evidence of growth remains. Occasionally a third curative treatment is

necessary. (3) To give two prophylactic doses at intervals of six weeks and fourteen weeks after the *last* curative dose. The reason for this preventive treatment is that with these mild doses the disease is not completely eradicated when all ocular evidence of it has disappeared. If a big enough dose is given to cure the disease with one treatment the reaction is painful, and unnecessary scarring is produced. The justification is that quite a number of recurrences have occurred in patients who refused to have the full treatment, while recurrence in the other cases has been exceedingly rare.

Technique.—(1) It does not matter whether radium or radon is used, and I believe mesothorium would prove equally effective. (2) Either plaques or tubes may be used. I prefer tubes, as I find they can be better adapted to the various cases. Further, when the area is large a number of tubes side by side form a very flexible plaque. (3) For small lesions I use a tube containing 50 mg. of radium, with a filter of 0.5 mm. of platinum. The tube has an active length of 15 mm. and an active diameter of 4 mm.; it is covered with rubber to cut down secondary radiations from the platinum. If the lesion is oval and not more than 6 mm. across or 12 mm. long, as determined by vision or touch, the tube is placed exactly over it. The dose in a patient of 40 to 50 years of age is sixty-five to seventy minutes. The raised lesions are given a longer time than the flat ones. If the lesion is circular and not more than 7 or 8 mm. in diameter the tube is placed for thirty-five to forty minutes in one direction and for a similar time at right angles to this. It will be noticed that the total dose has to be larger than when one direction only is employed. In older patients the dose is slightly increased, and in younger patients diminished, because the tissues become less and less radiosensitive with age. In lesions of greater size, two or more such tubes are used, or one tube is shifted from one situation to another, great care being taken to keep successive areas parallel and not to overlap. Owing to radiation from one tube playing on the area acted on by the other, and so increasing the dose, each treatment has to be shortened somewhat: fifty-eight to sixty minutes suffices when two tubes are used as above. Smaller quantities of radium may be used, and longer times, but the smaller the quantity of radium the larger the total number of milligram-minutes. Cases on the pinna of the ear which are resistant should be treated by interstitial radium (radium needles) straight away. As regards interstitial irradiation in other situations in early cases, my colleague, Dr. Roxburgh, buries filtered radon seeds under the growth, and is getting good initial results by this method. I have used radon seeds or radium needles buried beneath refractory growths with success. They must be buried sufficiently far out, and must be long enough, to act beyond the obvious edge.

Later Cases.—Included in these we get cases which have been treated by radium or α rays inefficiently applied, by surgery, or by caustics; but there are also a number of cases in which the disease has been neglected or disregarded by the patients themselves, and where there is therefore a larger extent of disease. (a) *Untreated cases.* To cover the larger area either a battery of radium tubes is used, or one or more tubes are moved from place to place. Plaques may be employed when the surface is flat, but this is rarely necessary. I use on such a case, for instance, eight to thirteen tubes with an active length of 1.5 cm., each containing 5 mg. radium and filtered by 0.5 mm. of platinum. The tubes are placed on strapping touching one another, and one layer of lint is placed between them and the patient's skin. The average dose, using thirteen needles, is two and a half hours. (b) *Treated cases.* Here, procedure entirely depends on the nature and severity of the previous treat-

ment. If non-radiation methods have been used, or if radiations have been employed in doses obviously too small, then methods similar to those described above may be used, but only continued if the response to the first dose is good. In cases where much irradiation has been employed, one either uses thicker filtration straight away or treats the case as in (c) below. (c) *Advanced cases.* In these days we no longer see advanced cases which have not been treated before, but those one saw in the past were very resistant, and drastic measures had to be used from the start. Usually such cases have become transformed into squamous epithelioma. If there are no marked radiation changes, probably the best method of treatment is by radium mass-radiation, using at least 1 gram and a filter of 2 mm. of platinum or its equivalent (for example, 4 mm. of lead). If this is not available, interstitial irradiation by radium needles or radon seeds may be used, but it must be thorough, and the foci must be so arranged that the whole disease receives a full dose. This is no easy matter as a rule, and the situation of the growth may make it impossible. It requires the utmost care, attention, and skill on the part of the surgeon. Slipshod methods are invariably punished by failures. The use of 0.8 mm. to 1 mm. platinum filtration on the needles is an advantage if the milligram-hours are much increased as well. The alternative is an extensive diathermy aiming at a thorough eradication of the disease, whatever the deformity, followed by irradiation of the cavity by radium over a wax plaque, or mass radium radiation if available; it is quite possible that full doses of a combination of radium and high-voltage heavily filtered α rays may be more effective than radium alone. The question of subsequent plastic operations is always a difficult one, but if the operation has been sufficiently thorough they may be done. Another alternative which is sometimes effective is to use a smaller quantity of radium over a wax plaque worn for twelve to fifteen hours a day for three, four, or five weeks until a severe reaction is produced. I have healed cases this way which had been submitted to much unfiltered radiation and had had fungating ulcers for years. The combination of this method with high-voltage heavily filtered α -ray treatment is sometimes effective. In these later stages, although the case is squamous epithelioma, it is only rarely that the glands become affected; so that no routine treatment of these need be carried out when there is no obvious enlargement of the glands. When present, they must be dealt with according to the indications in each individual case.

After-treatment.—Early cases treated with radium, as described above, need no after-treatment except to avoid getting the treated area exposed to sunshine or ultra-violet rays. On no account should ointments or salves be applied, as they intensify the reaction. Infra-red may also be harmful. In the rare event of a hypersensitive patient, a powder of calamine and bismuth carbonate is usually sufficient. If there is blistering a 5 per cent. anesthine (formerly called anaesthesin) ointment should be used. When severe treatment has been used, causing a severe reaction with blistering or an open sore, a dressing of radiostol one part, with three parts of liquid paraffin, promotes early healing. If there is much pain, anesthine ointment may be used.

Late Reactions.—Occasionally, after severe treatment followed by healing, an ulceration may develop years later. It may be very difficult to distinguish from a recurrence. Anesthine ointment usually heals it in a few weeks.

RESULTS

In the early stages the method of radium treatment advised will cure 99 per cent. of cases. Recurrence is very rare except when the patient has refused to have

the prophylactic treatment. In later stages there is still a very large proportion of cures in previously untreated cases. It is only when one has to deal with other people's failures that the results are not so good; yet many of these may be healed when treated drastically, and others can be kept in good health for many years. Cosmetically, the results in early cases will astound those who are not accustomed to this method. It is often difficult to discover where the lesion has been unless one knows where to look, and I have had cases where the second prophylactic dose was difficult to apply, owing to the absence of scarring. Careful notes and diagrams

must therefore be kept. We obtain ever a larger proportion of early cases as medical practitioners and surgeons get to realize the value of the newer treatment. As the public get to know of it they do not fear to come early, as there is no question of operation. Let us hope that those who use unfiltered radiation will soon discard this in favour of safer methods; our results will then be even better. Anyone whose statistics do not show more than 90 per cent. success in all cases, early and late, and something of the order of 99 per cent. in early cases, would do well to consider carefully what he is doing, and revise his methods.

THE DECLINE IN THE DEATH RATE OF DIPHTHERIA COMPARED WITH THAT OF SCARLET FEVER

BY

L. COBBETT, M.D., F.R.C.S.

For scarlet fever there is no specific treatment; for diphtheria we have had antitoxin since 1894; yet the death rate from the former disease has, as everybody knows, diminished almost to extinction, while that of the latter has undergone only a gradual and moderate decline. For the benefit of those who, like myself, do not readily take in the significance of rows of figures until they have been put into graphic form I append two charts compiled from the numbers given by the Registrar-General of the death rates of children under 15 years of age from these diseases during the last seventy-five years.¹

The chart for diphtheria certainly would not lead a layman to suspect the marvellous potency of antitoxin. Yet any pathologist who, having carefully estimated the minimal fatal dose of a diphtheria toxin for the guinea-pig, proceeds to measure out enough to kill one hundred thousand of these animals and adds to it a single cubic centimetre of a good antitoxin serum, and then finds that he can inject the mixture into one of these animals without any serious consequence, cannot but be disappointed that its universal clinical use has not been followed by more striking results, and wonder whether it is being employed in the best possible way.

As Ehrlich pointed out years ago the secret of its successful use is early administration. Cohn in 1904 published some figures for 1,000 cases treated in the Moabit

Hospital in Berlin, classified according to the day of treatment. Of those treated on the first day only 1.3 per cent. died, while of those treated on the fourth day 24.7 per cent. died. The Metropolitan Asylums Board long ago published a similar analysis of over six thousand children treated at the Brook Hospital. The mortality according to the day of treatment was as follows:

Day when antitoxin was given ...	1	2	3	4	5+
Number of cases ...	250	1,513	1,690	1,338	1,765
Mortality... ..	0	4.29	11.25	15.89	18.52

These figures ought not to be forgotten. May I be allowed to give an experience of my own which impressed me greatly at the time?

During the little epidemic in Cambridge in 1900-1 there were many cultures of diphtheria bacilli in the laboratory. The disposal of these caused me some anxiety, because a proportion of our staff were quite young boys. One day, missing one of these youthful attendants, I inquired where he was, and was told he had not turned up, and learnt, on further inquiry, that he had complained of his throat being sore on the previous evening. Armed with a syringe and antitoxin, I went at once to his home and found him in bed, quite ill, and very unwilling to be disturbed in any way or to sit up and be examined. On looking at his pharynx I thought I saw a little patch of commencing membrane; and a swab taken at the time yielded, next day, a culture of diphtheria bacilli. I did not, however, wait for the result, but injected antitoxin immediately.

With the intention of giving a prophylactic injection to his little sister I called again in the afternoon, some six or seven hours after my first visit. I then found my patient, who was so ill in the morning, sitting up, demanding his tea, and banging about with an illustrated newspaper that had been given him to read, but which he had rolled up into a club and with which he was vigorously whacking the bed.

¹ Statistical Review, England and Wales. Tables, Part I, Medical Table 9.