LONDON SATURDAY APRIL 30 1949

BASAL-CELL CARCINOMA (RODENT ULCER), WITH SPECIAL REFERENCE TO LESIONS ON NECK, TRUNK, AND LIMBS

BY

Sir CECIL WAKELEY, K.B.E., C.B., D.Sc., F.R.C.S., F.R.S.Ed.

Senior Surgeon and Director of Surgical Studies, King's College Hospital; Surgeon, Royal Masonic Hospital and Belgrave Hospital for Children; Consulting Surgeon, Royal Navy

AND

PETER CHILDS, M.Ch., F.R.C.S.

Surgical First Assistant, King's College Hospital

[WITH PHOTOGRAVURE PLATE]

During the last thirty-five years 237 cases of rodent ulcer have come under the care of one of us (C.W.) and 210 of these occurred on the face or scalp, while 27 were found to arise outside those confines (Figs. A and B). Summaries of the case histories of these lesions found elsewhere than on the face or scalp are now given.

Umbilical Region (3 Cases)

Case 1.—A man aged 58 presented himself in 1930 with a large rodent ulcer to the left side of the umbilicus. He had first noticed a small pimple in this region some 12 years previously. The ulcer was irregular in outline with a heaped-up and rolled-over edge (Fig. C). The ulcer measured $1\frac{1}{2}$ in. (3.75 cm.) at its greatest diameter, and its base was moist and in some parts covered by small sloughs. There was no enlarge-

ment of axillary or inguinal glands. Excision of the ulcer together with the umbilicus was undertaken through an elliptical incision. Recovery was uneventful. Microscopically the ulcer was a typical basal-cell carcinoma. This patient was last seen in 1939, when he was in good health and there was no sign of recurrence.

Case 2.—A man aged 60 was first seen in October, 1937, with a small rodent ulcer just below the umbilical margin. It had been present for two years and was gradually getting bigger. The ulcer had an irregular edge and was $\frac{1}{2}$ in. (1.25 cm.) across at its greatest diameter. Excision was undertaken through an elliptical incision. Recovery was rapid and the patient was discharged from the hospital on the fourth post-operative day. Microscopically the growth was a typical basal-cell carcinoma. The patient was well, with no sign of recurrence, two years later.

FIG. C.—*Case 1.* Rodent ulcer of the umbilical region. This lesion started as a pimple 12 years previously.

FIGS. A and B.—Diagrams illustrating distribution of rodent ulcers.

Case 3.—A seaman aged 47 was seen in 1942 with a small raised growth just to the right of the umbilical margin. There was a small ulcerated area in the centre of the tumour. The patient thought he had been stung by a fish while bathing at Alexandria some ten months previously. The growth was hard, with a raised edge. There were no palpable glands in the axilla or the inguinal region. Excision was undertaken through an elliptical incision. Recovery was uneventful. The histological report stated that the lesion was a typical basal-cell carcinoma. This man continued his war service and was discharged in 1946 quite free from any symptoms.

Chest Wall and Back (3 Cases)

Case 4.—A man aged 59 was seen in 1930 with an irregular ulcer the size of a half-crown on the middle of his back on a level with the inferior

angles of the scapulae. The patient had been conscious of a lump on the back for some five years. Excision was undertaken through an elliptical incision. Recovery was uneventful. The histology was that of a typical rodent ulcer.

Case 5.—A man aged 64 was first seen in the out-patient department in November, 1945, complaining of an ulcer on the anterior chest wall about $1\frac{1}{2}$ in. lateral to the right sternoclavicular joint. Some 19 years previously it had appeared as a spot the size of a pin-head. Gradually it became enlarged, and a crust formed on it. It was never raised above the adjacent skin surface. The ulcer was treated with x rays until March, 1947, at fortnightly intervals for courses lasting two to three months each. A total dosage of 4,100 units was given. Apparent cure was obtained twice but was followed by recurrence. On examination an irregular shallow depression was seen 1 in. (2.5 cm.) in diameter. It was almost entirely healed and epithelized, but part of the surface was covered by dry scabs. The surface was flat. The base was not depressed and the margin was not thickened or elevated, but there was an appreciable thickness and a certain stiffness as compared with normal skin. The ulcer was excised in June, 1947. The pathological report stated: "There is a central warty growth with several outlying nodules. It is not ulcerated. The cut surface shows no naked-eye evidence of infiltration of the subcutaneous tissue. Section shows the histological picture of a rodent ulcer. There is no deep infiltration of the underlying tissues" (Plate, Figs. 1 and 2).

Case 6.—A man aged 59 came under observation in December, 1948, with an ulcer on the left side of the chest wall. Thirty years earlier a small red nodule had appeared on the

left chest wall level with the skin, and it had gradually enlarged. Ten years ago a scab formed over it, and six years ago it became ulcerated. On examination an ulcer was found on the left chest wall in the mid-axillary line (Fig. D). The size of the ulcer was $\frac{1}{4}$ by 1 in. (1.9 by 2.5 cm.). The edge was irregular and

FIG. D.—Case 6. Rodent ulcer of left chest wall. This lesion had appeared as a small pimple 30 years before. It had ulcerated only six years before. When seen in out-patient department the ulcer had become secondarily infected.

rolled over in parts. The centre was ulcerated and infected, and the surrounding skin showed some inflammatory erythema. There was no deep fixation. The ulcer was excised in December, 1948. The pathological report was that of a typical rodent ulcer (Plate, Figs. 3 and 4).

Anal Margin (4 Cases)

Case 7.—A man aged 62 was seen in February, 1915, with a small irregular ulcer to the left side of the anal margin. It was about $\frac{1}{4}$ in. (1.25 cm.) in diameter, and had been present for four years. The ulcer edge was hard and "rolled over" in places. There was no enlargement of the inguinal glands. Excision was performed under general anaesthesia, and a small part of the external sphincter ani muscle was removed with the ulcer. Recovery was uneventful, with full sphincteric control. On histological examination the growth was found to be a typical rodent ulcer.

Case 8.—A man aged 64 was seen in December, 1920, with a small ulcer the size of a cherry stone to the right side of the anal margin. The patient had noticed a "pimple" for some years, but he could not be definite about its duration. Excision was performed under local analgesia and recovery was uninterrupted. The histology was that of a rodent ulcer.

Case 9.—A man aged 56 was seen in October, 1922, with a small irregular ulcer the size of a threepenny-piece situated at the posterior part of the anal margin. The patient had noticed the lump for five years. The growth was excised under

local analgesia, and recovery was rapid. The histology was that of a typical rodent ulcer.

Case 10.—A man aged 59 was seen in May, 1925, with a small irregular indurated ulcer to the left of the anal margin. It had been first noticed by the patient five years previously and was thought to have started in an external pile. On examination there was an ulcer with a raised edge. It was about 1 cm. in diameter, and in one area it involved the anal margin. Excision was performed under local analgesia, part of the external sphincter ani being removed. Healing was rapid and there was no anal incontinence. Histology revealed a typical rodent ulcer.

Thigh (4 Cases)

Case 11.—A man aged 54 was seen in March, 1916, complaining of an irregular ulcer on the outer side of his right thigh. It was the size of a split pea, and had been first noticed as a pimple two years previously. The ulcer had hard "rolled over" edges and had been irritated by the uniform trousers which the patient wore. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 12.—A marine officer aged 49 was seen in February, 1918, with a small irregular ulcer measuring 1 cm. in diameter situated on the outer part of his right thigh. He thought he had knocked his thigh against a rail a year previously, but was not certain of this fact. The ulcer was excised under local analgesia. The histology was that of a typical rodent ulcer.

Case 13.—A man aged 58 was seen in 1926 with an irregular ulcer on the outer side of his right thigh just below the greater trochanter. It was about 1 in. in diameter and had grown from a small pimple to its present size in eight years. It was excised under general anaesthesia. Histology revealed a typical rodent ulcer.

Case 14.—A male clerk aged 49 was first seen in November, 1948, complaining of a growth on his left thigh. It had started eight years earlier as a small pimple and had increased slowly in size since then. It was not painful. There was a swelling the size of a halfpenny on the anterior surface of the left thigh 4 in. (10 cm.) vertically below the left anterior-superior iliac spine. Its outline was irregular, with raised edges and a slightly depressed centre. Consistency was firm and the edges were well defined. It was attached to skin, but not deeply. It was excised under general anaesthesia in November, 1948. Histological section revealed a typical rodent ulcer with some cystic degeneration (Plate, Figs. 5 and 6).

Legs and Feet (2 Cases)

Case 15.—A stoker aged 62 was seen in 1923 with a small ulcer the size of a split pea on the lower part of the anterior surface of his left leg. A "pimple" had been present for eight years, and he had worn a bandage over it while in the Navy during the 1914–18 war. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 16.—A carpenter aged 59 was seen in 1926 with a small ulcerated area on the dorsum of his left foot. It was the size of a cherry stone and had been present for five years. The edge of the ulcer was irregular and was "rolled over" in parts. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Neck (4 Cases)

Case 17.—A married woman aged 49 was seen in September, 1928, with a small ulcerated area the size of a split pea situated on the left side of the neck just lateral to the hyoid bone. It had started as a pimple eight years previously, when she was serving as a stewardess. The ulcer was irregular, with hard edges. Excision was performed under local analgesia. Histology proved the growth to be a rodent ulcer.

Case 18.—A man aged 59 was seen in December, 1931, with a small ulcer just above the suprasternal notch. It had been present for four years and had started as a pimple. It was about the size of a cherry stone, with irregular edges. The patient had not worn a collar for three years because of the ulcer. Excision was performed under general anaesthesia. Histology revealed a typical rodent ulcer.

Case 19.—A married man aged 62 was seen in May, 1933, with a small ulcer the size of a sixpence just to the right of the ala of the thyroid cartilage. It began as a pimple and had been present for three years. Excision was performed under local analgesia. The growth was a typical rodent ulcer.

Case 20.—A stoker aged 56 was first seen in July, 1936, with an ulcer the size of a large pea in the midline of the neck just above the suprasternal notch. The ulcer had hard raised edges and had been present for over a year. Excision was performed under local analgesia. Histology proved the growth to be a rodent ulcer.

Arms and Hands (7 Cases)

Case 21.—A stoker aged 52 was seen in March, 1919, complaining of an ulcer on the centre of his left forearm. This had first appeared seven years previously while he was working in a tanker. The ulcer almost healed at times, but always broke down again. When examined the ulcer was found to be the size of a threepenny-piece. Its edge was irregular and was firm in consistency. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 22.—An ex-miner aged 62 was seen in April, 1924, complaining of a small ulcer just above his left antecubital fossa. The ulcer had started as a pimple three years previously and had appeared to heal over at times. It was the size of a split pea and its edges were irregular and firm. Excision was performed under local analgesia. Histology proved the tissue to be a rodent ulcer.

Case 23.—A man aged 66 was seen in March, 1928, complaining of a small irregular ulcer on the upper anterior surface of his right upper arm. The ulcer had appeared as a very small lump three years previously. It was now an irregular raised growth $\frac{1}{2}$ -in. (0.6 cm.) in diameter. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 24.—A married woman aged 52 was seen in May, 1930, complaining of an ulcer on the outer side of her left upper arm. The ulcer had started six years previously as a pimple and had gradually increased in size. It appeared to heal on three separate occasions. The ulcer was shallow, with a raised "rolled over" edge, and was the size of a cherry stone. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 25.—A man aged 60 was seen in September, 1932, complaining of a small ulcer just below his right antecubital fossa. It had first appeared four years previously after a blow on the forearm by a hammer. It was irregular, with a hard edge, and was about $\frac{1}{2}$ -in. (0.6 cm.) in diameter. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 26.—An electrician aged 69 was seen in December, 1934, complaining of a small ulcer on the back of his left hand. It had started six years previously, after an electrical burn from a live wire. The ulcer was shallow, with an irregular hard outline, and was $\frac{1}{2}$ -in. (1.25 cm.) in diameter. Excision and repair of the defect by skin grafting was performed under general anaesthesia. Histology proved the growth to be a rodent ulcer.

Case 27.—A man aged 56 was seen in May, 1940, complaining of a small ulcer on the back of his left hand. The ulcer was the size of a split pea, and it had a hard irregular edge. Excision was performed under local analgesia. Histology showed the structure of a typical rodent ulcer.

Discussion

Basal-cell carcinoma, or rodent ulcer, is a tumour composed of ramifying, often pointed, processes which invade the dermis and subcutaneous tissues; or of lobules composed of cells which have the character either of the basal cells of the epidermis or of the cells lining the pilo-sebaceous ducts. Cells of true sebaceous type do not occur. Sometimes the connexion with the basal layer of the epidermis can be made out in sections; in other cases continuity with the pilo-sebaceous organs is demonstrable. The amount of stroma is variable, but is usually relatively

large. It may be fibrous in the chronic types and embryonic in the more malignant tumours (Sequeira *et al.*, 1947).

Epidermal skin carcinomata, whether of basal, squamous, or mixed type, arise intra-epidermally (Savatard, 1931). They are preceded by a hypertrophic change in the affected area of epithelium, which results in the formation of a pre-rodent keratosis, finer and flatter than that of a squamous epithelioma (Molesworth, 1927).

The natural history of rodent ulcers is well illustrated by the above case histories.

In 14 of the 25 cases the lesion first noticed was a "pimple" or small red nodule. Over a period of years, ranging most frequently from four to eight years, the lesion grows slowly; the shortest history in this series was of 10 months, the longest of 30 years. For some years there is no ulceration, but eventually the epithelium over the lesion breaks down. There may be abortive attempts at healing. This occurred in three cases of the series. Finally, however, the patient is seen complaining of a chronic ulcer varying in size from $\frac{1}{4}$ to $1\frac{1}{2}$ in. (0.6 to 3.75 cm.) in diameter.

The patient is in the sixth and seventh decade of life (the youngest in this series was 47, the oldest was 69). Only two of the 25 patients were female.

The ulcer is irregular in outline, with a heaped-up "rolled over" edge which is indurated and even hard to the touch. The floor may show clean granulations, or may bear sloughs, or may be scabbed over by crusts. There may be evidence of epithelization. There is little or no discharge. If the ulcer has become secondarily infected the base may be necrotic and the surrounding skin may show an inflammatory erythema and induration. Typically there is no fixation deeply. The regional lymph nodes are not enlarged.

Low- and high-power views of a typical rodent ulcer, and of a rodent ulcer showing cystic change, are presented in Figs. 3, 4, 5, and 6.

Clinical Varieties

The clinical appearance of basal-cell carcinoma is not uniform. The most satisfactory classification of the different types is that of Sequeira *et al.* (1947).

Superficial Cicatrizing Type.—(1) The lesion may present as an irregular sclerotic scar surrounded by a rim of small greyish elevations. The surface is smooth, but ulcerates when the lesion becomes more active. (2) A flat infiltration of the skin may be found, underlying an ivory or waxy surface. Ulceration occurs late.

Non-Cicatrizing Type.—This is the typical rodent ulcer. It presents as a chronic, indolent, slowly growing ulcer, which spreads superficially and deeply.

The Terebrant Type.—This lesion may be highly malignant from the start, or may succeed the preceding types. New growth and ulceration progress very rapidly, in depth rather than on the surface, and the tumour is of great local malignancy.

Multiplicity of Lesions

Molesworth (1927) said that multiplicity of lesions in cases of rodent disease was commonplace in Australia. In this country rodent ulcers are often single, though two or three lesions in the same patient are not uncommon.

There is, however, a group of cases in which multiple rodent ulcers are found as described by Sequeira *et al.* (1947) and Johnson (1945). The lesions appear to be identical with those described by Little (1923) under the name "erythematoid benign epitheliomata." These multiple lesions are basal-cell carcinomata of the superficial cicatrizing variety. They occur in the form of a red plaque, at the edge of which is seen a very faint, wax-like, shiny, sinuous margin, narrow and raised; much flatter than the rolled edge of a typical rodent ulcer but clearly of the same

nature (Little, 1923). Histologically a basal-cell carcinoma is seen with unusually shallow invasion of the corium by epithelial down-growths. These multiple superficial lesions are usually numerous, and are diffusely placed over the trunk and limbs. They may be associated with a more characteristic non-cicatrizing rodent ulcer somewhere on the body.

Site

Bland-Sutton wrote: "Although rodent ulcer arises mainly on the face . . . it may occur on the neck and pinna, but never, so far as I know, on the limbs." Molesworth (1927) had not seen rodent ulcer on the hands or forearms; epithelial tumours in these areas he found always to be squamous epitheliomata. Sutton and Sutton (1942) said that the nose, forehead, upper lip, and covered parts of the trunk and extremities were preferred. Sequeira *et al.* (1947) described the site of election as the face above a line drawn just below the lobule of the ears and crossing the face below the nose. The inner and outer canthi, the side of the nose, particularly the alae, and about the ears were the commonest sites; rarely the lips were affected. Basal-cell carcinoma of the trunk were rare.

We have pointed out earlier in this paper that differentiation should be made between the typical non-cicatrizing type of rodent ulcer and the multiple superficial type. The latter is found diffusely distributed over the trunk and limbs. It is much less common to find typical single rodent ulcers in these sites.

Savatard (1923) quotes a case reported by Trimble in which an ulcerated basal-cell carcinoma involved a large area of the anterior abdominal wall. Johnson (1945) appears to have reported especially cases of multiple superficial rodent ulcers; among these there appear to have been one deep ulcer of the chest wall and one of the back. Lawrence (1941) reported two personal cases of basal-cell carcinoma of the anus and four cases found in the literature. Wilson (1941) reported four cases of basal-cell carcinoma of the vulva, and collected 23 additional cases from the literature; he included transitional-cell carcinomata among his cases. Newland (1936), among 600 personal cases of rodent ulcer, found five on the upper extremity and one on the buttock. Little (1923) recorded two cases of single superficial rodent ulcer, one on the buttock, and one on the thigh. Piérard and Dupont (1948) described under the name "nodular epithelioma" what were apparently cystic rodent ulcers—in one case on a leg, in the other on the scrotum.

Treatment

The morphoea-like or "card-like" tumours may be treated satisfactorily with CO₂ snow. Sutton and Sutton (1942) advocate Sherwell's treatment for small lesions: the lesion is curetted, and acid nitrate of mercury is applied. For rodent ulcers in general, however, choice of therapy lies between excision and irradiation.

Factors Which Influence Choice of Therapy

The following points demand consideration.

Site.—Regard must be had to both the accessibility and the proximity of important structures. Almost all rodent ulcers can be excised. With the development of skin grafting and plastic repair of skin defects there is now no site in which a rodent ulcer may be found which is inaccessible to surgical excision. Plastic repair of eyelids or nose can be readily performed. When irradiating rodent ulcers in some areas care must be taken that vital structures are not irradiated at the same time.

Surface Area of Lesion.—All small lesions are naturally the more readily excised. These lesions are also the more suitable for irradiation. Skin defects left by surgical excision can be readily covered by grafts or plastic repair. On occasion

the cosmetic effect may be better from irradiation of large areas, but greater exposure to irradiation is necessary, with its attendant disadvantages.

Depth of Penetration of Lesion.—This is difficult always to determine accurately. The more superficial a lesion the more accessible it is to irradiation, either by radium or by x rays. But superficial lesions are also readily treated by surgery. Surgery is the treatment of preference where penetration is deep into bone or cartilage.

Multiplicity of Lesions.—In certain cases multiple superficial lesions may be adequately treated with CO₂ snow—namely, those of morphoea or "card-like" type. In some cases superficial irradiation may have practical advantages over multiple excisions. But in the cases with deeper multiple lesions (and there are not usually more than two or three deep rodent ulcers in the same patient) surgical excision is not only practicable but the method of choice.

Age and State of Health of Patient.—Advanced age is not a contraindication to surgery. If the state of health of the patient is poor, local analgesia can almost always be used. Only rarely need a patient be condemned to irradiation on account of poor health. In patients of younger age groups surgical excision finds favour because with their longer expectation of life there is greater likelihood of the development of late complications of irradiation of the skin.

Availability of Apparatus and Trained Staff.—The amenities of surgery and persons trained in their effective use are more generally available than adequate radiotherapeutic apparatus and trained radiotherapists.

Surgical Excision and Irradiation Compared and Contrasted

Surgical excision is applicable to any lesion, and is directed to the area involved and no more. Irradiation becomes technically more difficult the deeper a lesion penetrates and the closer it lies to vital structures. Whereas one operation is required when surgery is practised, and the extent of excision necessary is readily gauged, multiple attendances for irradiation are often necessary, and dosage of irradiation is not standardized. Owing to uncertainty of depth of involvement irradiation may fail to destroy the deeper layers of cells. Some cells of the tumour may be resistant to irradiation. The peripheral extent of the growth may not be appreciated without surgical excision, and an adequate area of tissue may not therefore be irradiated.

The complications of surgical excision of rodent ulcers are negligible. Irradiation produces radiodermatitis, which may be followed by telangiectasis and atrophy; damage to vital structures not involved by the growth may be caused by gamma or x rays.

By surgical excision confirmation of diagnosis is obtained. Montgomery (quoted by MacKee and Cipollaro, 1946) showed that 13% of skin carcinomata, diagnosed clinically as basal-cell epitheliomata, contained prickle cells. These mixed or basal-squamous-cell epitheliomata are more radio-resistant than pure basal-cell tumours.

Recurrences occur consistently in 5% of cases treated by x rays. There should be no recurrence with adequate surgical excision.

With regard to time lost from work, admission to hospital, and mental trauma, the advantages are with surgery. In almost all cases rodent ulcers may be treated in the out-patient department under local analgesia. Arrangements can readily be made for premedication of the patients to diminish their worry. There is no danger of failure to complete the treatment with surgery as there is with the repeated visits so often necessary with radiotherapy.

Lastly, in the treatment of the recurrences after failure of irradiation, surgery is the only satisfactory choice. Recurrences tend to be more radio-resistant than the primary growth.

Summary

Twenty-seven cases of basal-cell carcinomata (rodent ulcers) are described occurring in sites other than the face and scalp.

The clinical varieties of rodent ulcer, the multiplicity of lesions, and their site are discussed.

Treatment by surgical excision and that by irradiation are compared and contrasted.

Surgical excision of all rodent ulcers is recommended.

We wish to express our thanks to the late Dr. ff. Creed, lately Director of Pathology, King's College Hospital, to Dr. H. A. Lucas, and to Professor H. A. Magnus, Professor of Pathology in King's College Hospital, for their assistance with the histology of these tumours. We wish to acknowledge the assistance of Mr. W. Smith, of the department of photography, King's College Hospital, who prepared the photomicrographs.

REFERENCES

- Johnson, M. (1945). *Brit. J. Derm.*, **57**, 58.
Lawrence, K. B. (1941). *Arch. Surg., Chicago*, **43**, 88.
Little, E. G. G. (1923). *Brit. J. Derm.*, **35**, 435.
MacKee, G. M., and Cipollaro, A. C. (1946). *X-rays and Radium in the Treatment of Diseases of the Skin*. Kimpton, London.
Molesworth, E. H. (1927). *Med. J. Aust.*, **1**, 878.
Newland, H. (1936). *Ibid.*, **2**, 221.
Piérard, J., and Dupont, A. (1948). *Brit. J. Derm.*, **60**, 50.
Savatard, L. (1923). *Ibid.*, **35**, 405.
— (1931). *Ibid.*, **43**, 161.
Sequeira, J. H., Ingram, J. T., and Brain, R. T. (1947). *Diseases of the Skin*. Churchill, London.
Sutton, R. L., and Sutton, R. L., jun. (1942). *Synopsis of Diseases of the Skin*. Kimpton, London.
Wilson, J. M. (1941). *Arch. Surg., Chicago*, **43**, 101.

STREPTOMYCIN TREATMENT OF TUBERCULOUS BRONCHOPNEUMONIA IN CHILDHOOD

BY

R. McLAREN TODD, M.D., M.R.C.P., D.C.H.

Senior Lecturer in Child Health, University of Liverpool

[WITH PHOTOGRAPHURE PLATE]

This report is concerned with the use of streptomycin for tuberculous bronchopneumonia in childhood, and is based upon the treatment of eight patients admitted between January, 1947, and April, 1948, to the streptomycin centres under the auspices of the Medical Research Council at Alder Hey Children's Hospital, Liverpool (7 cases), and the Royal Hospital for Sick Children, Glasgow (1 case). Two of the patients died, and the six survivors have been followed up for periods of between 6 and 22 months subsequent to admission.

Diagnosis

Tuberculous bronchopneumonia simulates other types of bronchopneumonia closely, the main clinical differences being the insidious onset, steady progress of symptoms, increasing pallor, flabbiness, and weakness, and the progressive character of the abnormal pulmonary signs in tuberculous bronchopneumonia (Naish, 1933). The evidence

upon which the diagnosis was based in our cases was as follows.

History of Contact.—The tuberculosis officer of the local authority co-operated with us closely during this investigation, and in seven cases a history of contact with a proved case of pulmonary tuberculosis was obtained (Table I).

History of Illness.—A period of ill-health varying from 27 to 90 days before admission to hospital was a feature,

TABLE I.—Contact History

Case No.	Contact	Site	X-ray Film	Sputum	Details of Contact
1	Stepfather	Lungs	Active tuberculosis	Positive	Living in same house: has had sanatorium treatment
	Stepfather's sister	Lungs	—	—	Living in same house until death from pulmonary tuberculosis two years ago
2	Mother	Lungs	Quiescent	Negative	Living in same house and nursing the child for one month before entering sanatorium
	Brother (18 years)	Lungs	Active	Positive	Living in same house for first 15 months of child's life
3	Grand-mother	Lungs	Active	Positive	Living in same house for first 15 months of child's life
4	Father	Lungs	—	—	Living in same house. Died of pulmonary tuberculosis, July, 1948
5	Father	Lungs	—	Positive	Living in same house
6	No known contact				
7	Mother	Lungs	Quiescent	Negative	" "
	Brother (3 years)	Glands in neck	Active	Negative	" "
8	Brother	Lungs	—	—	Lived in same house until death, at age of 15, from pulmonary tuberculosis, 1945
	(8 years)	Cervical glands; dactylitis	Active	Positive (Guinea-pig)	Lived in same house, but now in hospital with pulmonary tuberculosis
	Sister (7 years)	Lungs	Quiescent	—	Living in same house
	Mother—refused examination				" "

and in two cases the illness followed an attack of measles. All the patients had shortness of breath severe enough for the parents to remark upon it; cough of several weeks' duration was present in seven cases, sputum was noted in one case, and loss of weight had been observed in half the cases.

Clinical Signs.—The most striking signs were pallor (7 cases), variable degrees of dyspnoea (7 cases), cough (7 cases) accompanied by vomiting (2 cases), and poor nutritional state (3 cases). The pulmonary signs were those of bronchitis (4 cases), consolidation (3 cases), and collapse of the left lower lobe (1 case). (See Table II.)

Radiography.—Radiographs of the chest showed patchy shadowing of the lung fields in all patients: in Case 4 it was

TABLE II.—General Clinical Signs on Admission of Cases to Hospital

Case No.	Nutrition	Colour	Dyspnoea	Clubbing	Glands in Neck	Cough	Sputum	Chest Signs
1	Poor; very emaciated	Pale; no cyanosis	Slight	Fingers and toes	Small	Moderate	—	Consolidation both bases. Cavitation right upper lobe anteriorly
2	Poor	Pale; slight cyanosis	"	Absent	"	Severe, with vomiting	Yellow	Consolidation left lung anteriorly; bronchitic signs right side
3	Fair	Pale; no cyanosis	Stridor	"	None	Absent	—	Bilateral bronchitic signs
4	Good	Very pale	Slight	"	Enlarged and bilateral	Moderate	Swallowed	Consolidation upper two-thirds left lung
5	Poor	Pale	Marked	"	"	Severe	—	Generalized bronchitic signs
6	Fair	No cyanosis	Slight	"	None	Moderate	—	Generalized bronchitic signs
7	"	Pale	"	"	Small	Severe, with vomiting	—	Bronchitic signs at both bases
8	"	"	Absent	"	Marked enlargement, with discharging sinuses	Slight	Swallowed	Clinical evidence of collapse of left lower lobe; bronchitic signs in other lung fields

R. McLAREN TODD : STREPTOMYCIN TREATMENT OF TUBERCULOUS BRONCHOPNEUMONIA IN CHILDHOOD

FIG. 7.—Case 6. Oct. 15, 1947. Bronchopneumonic changes in both lungs, more marked on left.

FIG. 8.—Case 6. April 12, 1948. Showing considerable improvement.

SIR CECIL WAKELEY AND PETER CHILDS : RODENT ULCER

FIG. 1.—Case 5. Low-power view ($\times 23$) of recurrent superficial rodent ulcer found on anterior chest wall, showing multi-centric origin of recurrence.

FIG. 2.—Case 5. High-power view ($\times 260$) of section shown in FIG. 1.

FIG. 3.—Case 6. Low-power view ($\times 23$) of the lesion illustrated in FIG. D (in text). Typical rodent ulcer showing superficial ulceration, and deep penetration of corium on left.

FIG. 4.—Case 6. High-power view ($\times 260$) of the lesion illustrated in FIG. 3.

FIG. 5.—Case 14. Low-power view ($\times 23$) of rodent ulcer showing cystic degeneration.

FIG. 6.—Case 14. High-power view ($\times 260$) of rodent ulcer shown in FIG. 5.