is completed. This enables one to avoid heavy or prolonged sedation. Post-operative breathing exercises are restarted the day after operation, and in most cases heavy percussion of the thorax is allowed to be carried out by the masseuse during the first post-operative day. Movements in bed are encouraged, and our patients are rolled for washing purposes during the first post-operative day, unless their condition is unusually poor. Clinical examination of the chest is carried out daily as a routine for the first few post-operative days, for both diagnostic and therapeutic purposes. We believe that the movement and the activity involved in the clinical examination of the chest have a useful therapeutic effect. Coughing is encouraged by all those who deal with the patient. We endeavour to avoid infection in a collapsed lobe by postponing operation in any patient who has an upper respiratory infection or is in any way unfit. We have also been giving 3 g. of sulphathiazole by mouth three hours before operation, followed by 1 g. four-hourly after its completion, for 24 hours. There is no evidence whatever that this measure is of any use, but it seems reasonable to suggest that it may lessen the risk of infection in a lobe which has some stagnant secretion in the air passages.

Curative Treatment.—Should a pulmonary complication be diagnosed, we rely on frequent breathing exercises and heavy percussion of the chest to assist coughing and expectoration of sputum. We try to keep the patient as active in bed as possible, as movement often forces an unwilling patient to cough. We have occasionally used suction through a tracheal catheter, both as a prophylactic at the end of operation and as a therapeutic measure, when there appears to be difficulty in coughing. It certainly seems to assist subsequent expectoration. Up to date we have not subjected patients on whom a partial gastrectomy has been performed to bronchoscopy within the first few post-operative days. We have, however, used this for patients who have undergone rather less severe operations, and are prepared to consider it in suitable cases in the future.

Discussion

One of the great difficulties in discussing post-operative pulmonary complications is to draw a line between what is a complication and what is not. Hypoventilation, as described by Beecher (1933) and others, is probably universal in patients after this operation. Henderson (1935) refers to "collapse without symptoms" as almost a normal sequel to major surgical operations.

In this series we x-rayed only those who showed some signs on physical examination. In a second series we are now x-raying every patient as a routine during the first or second post-operative day. It seems likely that in assessing this second series we shall find a rather higher percentage of mild patchy atelectasis, which was almost symptomless but was apparent on a radiograph if looked for. Probably few patients have a post-operative course entirely free from cough and sputum, and if one watches carefully enough some slight pulmonary abnormality can be detected. One's complication rate may therefore rise as time goes on, but this should be of little importance if the awareness of these slight abnormalities leads, as it should, to a reduction in the incidence of the more severe post-operative complications. In a second series we rather expect to show a greater incidence in the mildest type of patchy atelectasis.

We believe, however, that the avoidance of the more severe types of post-operative chest complication depends largely on the satisfactory post-operative condition of the peritoneal cavity. No amount of post-operative treatment will prevent those severe chest complications which are due to an unsatisfactory post-operative peritoneal condition.

Summary

The post-operative chest complications in 100 consecutive cases of partial gastrectomy have been reviewed.

A pulmonary complication was detected in 34 cases.

The influence of various factors is discussed.

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TWO VARIETIES OF LEUKAEMIA IN ONE FAMILY

BY

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The aetiology of leukaemia is so obscure that all facts which might ultimately be of value in solving this problem seem worth recording. Leukaemia occurs sporadically, and familial incidence is rare (Whitby and Britton, 1942); hence the presentation of the following notes of the disease, which apparently involved different types of white blood cell, in a brother and sister of middle age. The two patients lived in the same house; there were no other members in the family, and there was no family history of other cases of leukaemia.

Case I

Mr. A., aged 46, was admitted to hospital on Jan. 20, 1942, complaining of a sore throat of six weeks' duration, with loss of weight and general weakness, slowly developing for a number of months. The chief clinical features were marked pallor, tonsillar enlargement with yellowish exudation but no obvious ulceration, cervical adenitis, and slight enlargement of the liver; the spleen was not palpable. Fever up to 100° F. was noted. The pulse rate was 120 to 140 a minute. Death occurred five days after admission, but a necropsy was unfortunately not permitted.

Case II

Miss A., aged 43, entered hospital on April 22, 1944, some two years after her brother, complaining of sore throat, spontaneous bruising over forearms and abdomen, a single epistaxis, and menorrhagia; there were also fatigue and headache of four months' duration. The chief clinical features were a sallow colour of the skin, ulceration of the throat with yellowish-white sloughs on the soft palate and tonsils, a single enlarged lymphatic gland at the right angle of the jaw, subcutaneous haemorrhages on the forearms and abdomen, and microscopic haematuria. Neither liver nor spleen was enlarged. There was fever up to 105° F., with rigors every evening. Pulse rate, 110 to 160 a minute. This patient died in coma six days after admission, and again no necropsy was possible.

Haematology

In Case I only a single blood count was done and a supply of films was taken for staining. The following figures were recorded: erythrocytes, 2,000,000 per c.mm.; haemoglobin, 55%; colour index, 1.4; leucocytes, 201,000 per c.mm. Differential count (1,200 cells): monocytes, 86.8%; monoblasts, 2.5%; lymphocytes, 7.4%; polymorphs, 1.7%; myelocytes, 1.6%. Nucleated red cells were also present, numbering 16 per 1,000 w.b.c.

It is to be noted in the differential count that there was a great preponderance (86.8%) of cells regarded as monocytes. These are contrasted later with the abnormal white cells found in the sister's blood. No sternal puncture was carried out.

In Case II two blood counts were done—on admission and again five days later. Sternal puncture was also performed. Blood examination (April 22, 1944): erythrocytes, 3,110,000 per c.mm.; haemoglobin, 51%; colour index, 0.8; leucocytes, 88,000 per c.mm. Differential count (1,000 cells): myeloblasts, 92.6%; lymphocytes, 6.6%; polymorphs, 0.8%. No promyelocytes or myelocytes were noted. On April 24 sternal puncture was performed; examination of the marrow confirmed the findings in the peripheral blood. Leucoblastic cells greatly exceeded erythroblasts in number, and again 92% of the marrow cells were regarded as typical myeloblasts.

Discussion

Apart from the interest of leukaemia of acute type occurring in middle age and affecting brother and sister living in the same house, the question whether both suffered from the same or from different haematological varieties of the disease requires discussion.

In the blood film of Case I 86.8% of the cells were undoubtedly typical monocytes, the majority of which, however, contained a convoluted nucleus, and were, in fact, identical with blood histiocytes as described by Levine (1934). One of these was seen to have ingested a red cell. The 2.5% of cells regarded as monoblasts contained large, round, densely staining nuclei, some of which showed one or two nucleoli; the cytoplasm, Leishman-stained, was blue and relatively small in amount. It is to be remarked that myelocytes and mature polymorphs together accounted for only 3.3% of the white cells.

Lymphocytes, mainly of the small variety, made up the remainder. A hyperchromic type of anaemia affected the red blood cells, the colour index being 1.4. Haematologically, therefore, the signs were those of monocytic leukaemia. Reference to the literature, however, indicated that these facts alone were not conclusive evidence in favour of such a diagnosis. The question arose whether the brother had died not of monocytic leukaemia but of a myelogenous leukaemia, which had been in the monocytic phase at the time of his arrival in hospital (Kracke and Garver, 1937). The absence of a marked myeloid reaction was regarded as a strong point in the support of the former diagnosis.

The striking feature of the blood picture in Case II was the presence of a high percentage (92.6) of mononuclear cells, each of which, when stained by Leishman's method, consisted of a round, eccentrically placed nucleus, often containing nucleoli, and blue agranular cytoplasm; many were undergoing division. These cells were considered to be myeloblasts. Only 0.8% of the leucocytes were polymorphonuclear, and the remaining 6.5% were lymphocytes.

These findings, together with those in the bone marrow, clearly constituted a blood picture of myeloblastic leukaemia.

Conclusion

Two cases of very acute leukaemia, occurring in a brother and sister living in the same house, are reported. The sister's illness developed two years after her brother's death.

In the brother, a study of blood films strongly suggests the diagnosis of monocytic leukaemia, whereas the sister undoubtedly suffered from acute myeloblastic leukaemia.

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SUPERFICIAL GANGRENE IN ADOLESCENT DIABETES

BY

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Gangrene in the young diabetic is a rare event. Joslin (1940), the greatest authority on clinical diabetes, describes it as an accompaniment of arteriosclerosis, therefore developing almost entirely in the arteriosclerotic era of life. Of the few cases recorded in young people, some are determined by rare vascular accidents, disease of the blood vessels, or overwhelming infection of devitalized tissue. Kiefer, Brigham, and Wheeler (1926) reported frank gangrene of the entire left foot due to infarction in a youth aged 19 who was in diabetic coma complicated by pneumonia. Gangrene of the nose in three children under 10 years of age was described by Bowers (1924). Carbuncle, essentially a gangrenous lesion, may be a grave complication of diabetes at any age.

Recently we have seen two cases with a pathology obviously differing from the above rarities and from the common gangrene of the extremities of elderly diabetics. With their description is included that of a third case almost meriting the bizarre title "dermatitis artefacta gangrenosa diabetica."

Case I

A boy aged 15 who had suffered from diabetes for three years was admitted to hospital on April 25, 1944, in coma. At an outpatient clinic on April 18 his diabetes had seemed to be well controlled by two doses of soluble insulin, with a noon blood sugar of 143 mg. per 100 c.cm., slight glycosuria, and no ketosis. Three days later an illness labelled "gastritis" had started with much vomiting. Insulin, at first reduced, had later been omitted, and coma had inevitably ensued.

No complication was found on clinical examination. The coma was profound, with air hunger, ketosis, and extreme dehydration.

The pulse rate was 140, the temperature 98.2°, and the respiration rate 30. The blood pressure, at first 90/60, later fell to 80/50. A specimen of urine could not be obtained for some hours, but then showed gross amounts of sugar and ketones, with a strong reaction to ferric chloride. The blood sugar attained the notably high level of 1,320 mg. per 100 c.cm. Despite his coma the boy was so intensely restless that the insertion of a cannula into the right internal saphenous vein with splinting of both legs offered the only chance of maintaining the necessary intravenous therapy over a long period. This seemed a better arrangement than splinting of the arms.

Although four-hourly attention to the back was scrupulously observed, a large area of gangrene, involving the upper part of the right buttock, suddenly appeared on the second day of splinting. The surrounding skin was red and indurated, and over the blackened skin of the gangrenous part small vesicles containing serous fluid arose. Separation at the edges was apparent by the third day, but a week later secondary infection had spread to the underlying fatty tissues and an abscess in the right buttock was evacuated. Culture of the pus produced *B. coli*. Consciousness was regained on the third day, and a complete recovery made from the coma. Fig. 1 shows the gangrene as it appeared on May 15.

FIG. 1.—Case I. Photograph of the gangrene on May 15, one day before separation of the slough and eighteen days from the onset.

Case II

A soldier aged 24 was transferred on June 2, 1942, from another hospital for stabilization after diabetic coma. He had noticed thirst and polyuria for six months, but had felt quite well until a carbuncle appeared on the back of his neck on May 20. At this time he was on manoeuvres, and diabetes was not diagnosed until his admission to hospital on May 30 in diabetic coma, which lasted for two days. The blood sugar was then 560 mg. per 100 c.cm., and dehydration, ketosis, and peripheral circulatory failure seem to have been pronounced. The coma had been treated in the usual way and the diabetes was well controlled.

Each knee showed an area of dry superficial gangrene on the anterior surface. Overlying the surface of the flexed knee each area was 4 in. long by 3 in. broad on the right and 2½ in. on the left, the outer border on the right being just lateral and on the left just internal to the midline of the knee. The shape and symmetry of these lesions, almost mirror images as they were, suggested that they were due to pressure of the bed-clothes with the knees flexed and the thighs in a position of slight abduction and external rotation. There was no effusion into the joints or adenitis. Separation was complete in four weeks, and in six weeks the areas were healed.

The patient was well on discharge after four months, but in the interval many embolic abscesses, including a deep staphylococcal abscess in the adductor muscles of the left upper thigh, required surgery.

Case III

A packing-case maker, aged 29, who had been diabetic for three years, was admitted on July 15, 1942. Mentally a little dull, he was a most unstable diabetic, and the bruise on his left thumb, well shown in the photograph (Fig. 2), attested to those insulin reactions, accompanied by diplopia, through which his erring hammer would miss the nail, held in his hand, and strike his thumb.

For the first of his three years of diabetes he had had great difficulty with his injections and had been warned not to inject too deeply. When asked to demonstrate his usual technique he produced to our horror, by the injection of 20 units of soluble insulin 40 units per c.cm. in strength, an intradermal wheal corresponding in size to the lesions shown in the photograph. These consisted