Leukaemia

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LUEKEMIA is a disease characterized by a permanent increase in the leucocytes of the blood associated with an overgrowth of leucoblastic tissue. The impression that one gains from reading the text books on the subject, is that Leukemia is a very rare condition, a sort of "once in a lifetime" disease. It therefore comes as a distinct shock to an interne to encounter cases of Leukemia fairly frequently, and to realize that this condition must be carefully ruled out in the differential diagnosis of cases presenting enlarged lymph glands, palpable spleen, or haemorrhages of obscure etiology. With this thought in mind, the following cases are presented:

CASE I.

Male—Age 16. Golf Caddy.

This patient first presented himself to the oto-laryngology clinic at the Dalhousie Public Health Centre on September 6, 1935. His complaint at that time, was a sore throat lasting for three weeks.

Physical examination revealed the following:

1. Marked cervical adenitis
2. Infected tonsils
3. Several carious teeth

He was referred to the Surgical Clinic for treatment of the adenitis and tonsillectomy was advised when the glands had subsided.

On September 9, 1935, he returned to the Surgical Clinic and the report was as follows:

There is a glandular enlargement on both sides of the neck in the upper deep cervical groups; advised to return in a week for excision of a gland.

The patient did not return to the Health Centre until September 18, 1935, when he was admitted to the Medical Clinic, complaining of:

1. Pain in the subcostal angles of 2 days duration.
2. Sore throat and infected tonsils of five weeks duration.

History: Pain came on suddenly two days ago, while eating apples. This was dull pain in the left subcostal angle accentuated by movement and by deep inspiration, not affected by food. No vomiting, constipation or diarrhoea. No cough. Physical examination: numerous, enlarged, firm, discrete, movable, non-tender glands of sizes varying from a millet seed to a plum in all cervical triangles, both axillae and groins.

Spleen palpable 2 fingers' breadth below right costal margin. There was marked tenderness on palpitation.

No mediastinal widening could be demonstrated.

No gland masses were palpable in the abdomen.

A blood picture done at the time showed:

Haemoglobin 75%
White Blood Cells.....32.000
Polymorphs 23%
Lymphocytes 74%
Large Mononuclears 2%
Eosinophiles 1%

Patient was discharged to return in one week's time. Three days later he began to bleed profusely from nose and mouth and was taken to the Victoria General Hospital. The day before admission he had done his day's work caddying for 36 holes of golf. History and examination in hospital was as follows:

Complaints: 1. Weakness.
2. Vomiting of blood.
3. Nose bleeds.

Family and personal history were negative. Present illness: 6 weeks before admission he noticed tender, painful swellings on both sides of his neck causing difficulty in swallowing. He experienced some weakness but this was not marked. The swellings persisted but after three weeks decreased slightly in size and became painless. Weakness grew worse. His legs were tired and sore after his day's work. On the day before admission, he noticed a purplish blue spot on lower portion of right leg.

On the day of admission profuse bleeding started from the nose and continued all day. During the afternoon he vomited a large amount of blood. Weakness became marked and he had persistent pain across the upper abdomen.

Physical examination: white male in weakened condition, color poor. There were numerous haemorrhagic spots over the whole body but most numerous over the legs. Tonsils: both enlarged, pale. Neck: numerous palpable glands on both sides, the size of a pea to an almond, firm, discrete, not tender, not attached to skin or deep structures. Similar palpable glands in both axillae and groins. Abdomen: spleen palpable just below left costal margin and tender on palpation. Blood picture on admission:

Haemoglobin 65%
Red Blood Cells.....3,330.000
White Blood Cells..... 138.000

Differential Count:

Polymorphs 4.3%
Lymphocytes 90.3%
Large Mononuclears 5.0%
Eosinophiles 0.4%

Red Blood Cells: Moderate degree of achromia and some macrocytosis.
White Blood Cells: Some Lymphoblasts seen.

Remarks: Picture is that of a chronic lymphatic leukemia, with a moderate degree of secondary anemia. Other laboratory findings were:

Urine—neg. (on routine examination)

Bence Jones bodies negative
Basal Metabolic Rate, + 10

The patient was treated symptomatically with ice bags, morphia and haemostatic serum. For several days he went rapidly down hill but on September 28, he had a slight rise in temperature, and the glands began to decrease and the petechial spots to disappear. By October 4, the glands were much smaller and the petechiae practically gone. The blood picture was:

White Blood Cells.....9,200
Polymorphs 39.5%
Lymphocytes 53.0%
Large Mononuclears 5.5%
Eosinophiles 2.0%
No abnormal varieties.

On October 8: White Blood Cells 4,350.

Polymorphs 60.5%
Lymphocytes 35.0%
Mononuclears 4.0%
Basophiles 0.5%
No abnormal varieties.

On October 9, patient complained of a severe toothache which persisted until October 14, when a dental abscess was incised. At this time the White Blood Cells were 12,000.

During this interval, a gland was removed for section. The pathologist's report confirmed the diagnosis of Lymphatic Leukemia phase. Many capillaries were filled with lymphocytes and the gland stroma was over-run with them.

From this date the condition steadily became worse. He suffered from several nose bleeds, and frequent vomiting. Blood picture on October 28 showed White Blood Cells, 116,000. Smears showed many lymphoblasts and a few myelocytes.

Polymorphs 15%
Lymphocytes 71%
Lymphoblasts 12.0%
Mononuclears 2.0%

The spleen was larger and patient complained of upper abdominal pain and sore throat.

On October 27, the left tympanic membrane ruptured and there was a discharge from the ear. On this date the White Blood Cell count was 233,000. The condition rapidly progressed and on October 29, patient expired.

COMMENT:

This case illustrates many of the salient points in the diagnosis of Leukemia. It is a case of acute Lymphatic Leukemia, that is, the leucoblastic progress is mainly lymphoid in nature. This is the type most commonly seen in this country, if one may judge by the admissions to the Victoria General Hospital.

The onset, with sore throat, swelling of the tonsils, and swelling of the lymphatic glands, followed by weakness, haemorrhage, purpura and increasing anemia, is typical of the disease. Of particular interest in this case, is the temporary remission both symptomatically and in the blood findings during his stay in hospital. Such remissions are seen particularly in the presence of an acute infection.

It would seem that the dental infection might be responsible for the change in this case. Well shown is the inadequacy of any treatment in such acute cases. This can only be of a symptomatic nature. In the more chronic forms, radiation therapy is of use but in the acute variety, it is actually contra-indicated.

CASE II:

Male—Age 29. Laborer.

This patient was first admitted to the Victoria General Hospital on March 22, 1936. His history and physical examination were as follows:

Complaints: 1. Severe cough
2. Hemoptysis
3. Soreness in left chest

Family History: A grandmother died of cancer of the breast, otherwise, nil.

Personal History: Severe attack of influenza in 1919. He had recovered from an attack of diptheria about five weeks before admission. Occasional colds and sore throats.

Present Illness: Two weeks before admission patient had a severe cold and gargled with kerosene, some of which he aspirated into his lung. He was seized with distress and pain in the left side of the chest accompanied by racking cough. Several hours later, he had severe chills. The next day he coughed a great deal and spit up some fresh blood, small in amount. On the day of admission, he vomited several times.

Physical Examination: Young man, good color, severe cough, some respiratory distress. No masses palpable in neck. Respiratory system: Slight limitation of movement on the left side of the chest, and impaired resonance over the lower 2/3 of the left back with scattered crackling rales and tubular breath sounds.

Blood Count on admission showed the following:

Red Blood Cells.....3,500,000
Haemoglobin 50%
White Blood Cells.....3,600

At this time a diagnosis was made of broncho-pneumonia, following aspiration of kerosene. The leucopenia was noted and was attributed to the severe toxaemia present. The patient ran the usual course of a severe broncho-pneumonia with a high swinging fever, rapid pulse, cough and bloody sputum, but the leucocytes steadily decreased in number until April 8, when the white cell count was 1,200. On this same date, 17

ounces of fluid were aspirated from the left side of the chest. Due to the severe leucopenia the prognosis looked very bad, and as a last resort, treatment was instituted with Pentnucleotide, a drug prepared from nuculear proteins, which is supposed to act as a specific stimulant to the leucoblastic tissue of the bone marrow. From April 8 to April 18, 230 cc. of Pentnucleotide were given in 10cc. doses, intramuscularly, one to three doses being given each day. This was followed by a remarkable change in the leucocyte count. On April 11, the count was 950 but from this point on, it gradually rose and on April 18, was 3,950.

During this time the patient's general condition steadily improved. X-ray of the lungs showed a resolving pneumonia. On May 20, the White Blood Cells were 8,100. Differential count on March 26 had shown:

Lymphocytes 74.5%
Polymorphs 20.0%
Large Mononuclears 5.50%

Coincident with the rise in the cell count, the blood film assumed a normal appearance and on April 15 was as follows:

Polymorphs 63.0%
Lymphocytes 31.5%
Large Mononuclears 5.0%
Basophiles 0.5%

From this point on the patient made steady improvement and was discharged from hospital on June 23, 1936.

Patient was readmitted on August 29, 1936 for the purpose of demonstration before the Dalhousie Refresher Course. At this time temperature, pulse and respiration were normal. He looked healthy and said he had been feeling fine all summer. X-ray examination showed a great reduction in lung markings since the previous examination. His White Cell Count was 11,750, but no differential was done. A decayed tooth was removed and bleeding was controlled with difficulty, the socket having to be packed twice.

Patient was discharged on September 3rd. He was readmitted on September 14. Since his previous discharge, bleeding from his tooth had never completely stopped. He had been feeling very weak, and tired and had been in bed most of the time. Pain in the chest had troubled him and he had spit up bright blood several times.

Physical Examination: Patient had a marked pallor, he was continually spitting blood-stained sputum and he looked very ill. There was a small area of haemorrhage into the sclera of the left eye. There were numerous small glands palpable in the neck, and several in both axillae. The abdomen looked fuller than on examination two weeks previously. The spleen could be palpated four fingers' breadth below the left costal margin.

Blood Count at this time showed:

Haemoglobin	28%
Red Blood Cells	2,320,000
Color Index	0.61
White Blood Cells	83,400

Blood Platelets—Greatly decreased.

Differential:

Polymorphs	2.5%
Lymphoblasts	0.5%
Lymphocytes	87.5%

REMARKS:

Blood picture is that of a fairly acute lymphatic leukemia, associated with a severe secondary anemia. The original leucopenia appears to have been an aleukemic phase.

From this date ,the patient's condition steadily grew worse and he died on September 22nd.

COMMENT:

Apparently this patient was suffering from a chronic lymphatic leukemia which was unrecognized on his first two hospital admissions. On his first admission he was in an aleukemic phase. No suspicion of such a state was aroused at the time, but when his history is read in the light of subsequent events, several suspicious facts are elicited. One of his initial complaints was hemoptysis and it is possible that this may have been a leukemic manifestation then. The high percentage of lymphocytes in the first differential count is also significant. In many cases of Leukemia, the count is reduced under the influence of an infection and apparently this happened in this case. When the pneumonic process improved, the leucocyte count gradually rose until he left the hospital. On his return in August, the count was still higher. During the next two weeks the disease entered an acute phase which terminated in death. One wonders if the large dosage of Pentnucleotide stimulating the leucoblastic tissue, had anything to do with this increase in leucocytes and their sudden wild proliferation three months later. This is, however, unlikely since the compound is said to stimulate the bone marrow, not the lymphoblastic tissue.

(The writer wishes to thank Dr. K. A. MacKenzie for permission to report these cases).

To be ignorant of the lives of the most celebrated men of antiquity is to continue in a state of childhood all our days.—*Plutarch.*

A conservative is a man who will not look at the new moon out of respect for that "ancient institution" the old one.—*Douglas Jerrold.*