

THE POSSIBILITY OF PRECIPITATING THE LEUKEMIC STATE BY EMOTIONAL FACTORS

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LEUKEMIA in the human individual may develop without any known precursor, but frequently it occurs following a precipitating incident or set of incidents. It is apparent from a review of the literature that various physical, chemical and possibly infectious agents are involved in the inception of some of these diseases.¹ Exposure to irradiation from x-ray or radium, contact with or exposure to benzol or its derivatives; physical trauma, and the use of arsenical and sulphonamide drugs are some of such agents. Infections which seem to have played a part in precipitating these diseases are tuberculosis, syphilis and pneumonia. The relation of infection in this regard is not as well established as that of the physical and chemical agents. Exposure to benzol and exposure to irradiation from x-ray or radium are more clearly related to the precipitation of the leukemic state than is exposure to other agents.

No one believes that these agents cause leukemia, but it is possible that each may act to upset the normal balance of blood formation so that leukemia results.

Results of experimental work^{2, 3, 4} point to the normal control of blood formation by hormonal as well as dietary factors. If leukemia is precipitated by these chemical and physical agents, this probably is brought about by changing the hormonal balance. In those cases of leukemia in which such agents are not uncovered in the pre-leukemic history, it is possible that emotional factors may have acted in a similar role in precipitating the leukemic state.

For many years, the influence of emotional reactions on physiologic processes has been well known, but only within comparatively recent times have studies revealed the significance of emotional factors in precipitating or aggravating a number of disease processes such as peptic ulcer, asthma, mucous colitis, etc. As the etiologic importance of these factors has been demonstrated, a much better understanding of these illnesses has been brought about. Milkorath⁵ and his co-workers showed that leukocytosis, with a normal differential, "appeared to be intimately related to the psychopathologic emotion." They explained the elevation of the total white cell count on the basis of a "redistribution of the white cells from the organ reservoirs." It is well known that there is an intimate interrelationship between emotional factors, the autonomic nervous system and the endocrine glands. These findings, therefore, have led us to believe that the frequent occurrence of emotional difficulties in patients with leukemia may be more than a coincidental finding. Often these patients volunteered a great deal of material concerning their own psychologic difficulties. Therefore, we have endeavored in a few cases of leukemia to determine the emotional background, and in this paper we wish to present and discuss the emotional histories of 6 cases prior to the development of leukemia.

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CASE REPORTS

Case 1. K. R. was a 26 year old white man who entered Lakeside Hospital, Cleveland, March 1939. His boyhood was normal up to the time he entered junior high school. At this time, in 1929, his father suffered severe financial losses. He stated: "I began to worry more than my father." He graduated from high school in 1931 and by this time his father had lost everything except his home. At night he would lie awake trying to figure out what he and his father could do to stave off financial disaster. He went to college and worked part time to pay his tuition. His college work was of very poor quality the first two years and he had a very fatalistic attitude concerning it. It was difficult for him to work because of worry over finances—not only his own but his father's. His work improved in the third and fourth years because he realized that he would not graduate unless he applied himself. It was necessary to go to school an extra trimester in order to have sufficient credits to graduate. He met his wife in his second year in college, 1933, but was not married until 1938. No sexual intercourse occurred during this time, but the patient did develop an enlarged prostate that required massage. The long courtship was a definite strain and he worried concerning how he could support a wife. In March 1937, he developed fullness in the left upper quadrant of his abdomen. In August 1938, he had considerable "belching" and nausea and vomiting. A physician at this time told him he had a nervous stomach.

When the family had heavy financial losses in 1929, the patient's mother became emotionally upset and worried a great deal. She confided in him rather than in his father and this gave rise to emotional turmoil in him. During the last year of college, he was greatly depressed and cried frequently. There were no death wishes. He worried and became very tense the summer of 1938 just before being married; he could not eat and gagged after meals and at times he vomited. He felt that he was close to a "nervous breakdown" just before he was married.

He seemed to be an extremely tense, worrisome individual who was rather sensitive and proud and somewhat aggressive. He resented being dependent on anyone. Leukemia was apparent four months after his marriage. He lived one and one-half years following the diagnosis of leukemia. Necropsy was performed in the Jefferson Hospital and the anatomic diagnosis substantiated the diagnosis of chronic myeloid leukemia.

Case 2. K. H. was a 57 year old white woman of Russian birth. She entered Jefferson Hospital, Philadelphia, late in the summer of 1939. A diagnosis of chronic myeloid leukemia had been made five years before. The following history was obtained from her sister. The patient had been a timid introspective child; she had cared more for books and studies than for social gatherings and was a good student. After she had finished high school in Russia, she met and fell in love with a young man. His family disapproved of their love affair and she was not allowed to marry him. This was a great disappointment to her and even up to the latter part of her life she mentioned him and stated that her life might have been different had she been permitted to marry him.

While she was still in high school, she started to study music. When she was 22, another man fell in love with her and after much persistence, he persuaded her to marry him. She was fond of him but probably never really loved him. He was domineering and egocentric and her life with him was probably never completely happy. Immediately after their marriage, he had difficulty in earning enough to provide for the two of them so that she helped by giving music lessons. Early in their married life she had a "nervous breakdown" and could not speak for a time. She also had several amnesic episodes. Soon after these occurred, the young couple went home to live with her parents, with whom they resided for two or three years. During this time a son was born. Their fortunes improved and they had their own home and no financial difficulties until the Russian revolution in 1917. Her father died in 1915 and this was a great shock to her, as was her mother's death in 1917. Following the revolution, her little family found it necessary to leave Russia and went to Germany. Difficulties in Germany in the early twenties brought them to this country. Finally, her marriage ended in divorce. Her life had been one disappointment after another.

The diagnosis of leukemia was made five years prior to her entry into Jefferson Hospital. She died in October 1939, and the necropsy findings were those of chronic myeloid leukemia.

Case 3. S. F. was a 39 year old white man. He entered Lakeside Hospital, Cleveland, in the winter of 1939. A psychiatric interview was obtained January 19, 1939. This man was a chronic worrier. He had been

brought up on a farm but at the age of 21 he was restless and ambitious to go into business. He married at 20 and his wife was never well. At 22, he worried over financial losses incurred in a filling station which he owned. His wife died, four years after their marriage, while giving birth to a child. He was worried and grief-stricken but he worked hard and did fairly well in business, saving about \$20,000 up to 1929. From 1930 through 1933 he was worried about finances most of the time. He lost his business, spent his entire savings and then went back to work for his father on a fruit farm. There he made no money, was depressed and later fought with his father and left the farm discouraged and unhappy. Throughout this entire time, he was physically well. In 1934, he again tried to go into business, determined to make good, and throughout 1934-7 he was not so easily worried and his finances were a little better managed. In 1937, he had his teeth extracted and he bled considerably and this again worried him. He also tired easily at this time and had no "pep." In 1938, he used up his savings again, was unable to work well and everything then "seemed to go from bad to worse." He was afraid, and seemed to have lost his nerve, and he cried easily. Late in 1938, the diagnosis of chronic myeloid leukemia was made. This patient died at home, May 1940. A necropsy was not obtained.

Case 4. G. P. was a 46 year old man who was first seen in the Jefferson Hospital, Philadelphia, clinic the winter of 1940. He had had chronic myeloid leukemia for six years, and had been treated in several other clinics. A psychiatric interview was held in October 1940. He was of German-American extraction. His school work had been of good quality but he went to work immediately following graduation from high school. At about 25 years of age he went to work for a rubber company and a year later was married, but almost immediately afterwards he was transferred from New Jersey to a plant in Canada. Here he was placed in complete charge of construction, production and sales of a new branch of his company. His wife, however, remained in the United States the first year. Almost the entire burden of responsibility of the new plant was carried by him. He had few friends and almost no one to whom he could confide his difficulties. He was under considerable tension and felt that the responsibility was very great. At this time he began to have queer sensations in his "stomach" and his digestion was poor. He became easily fatigued and had great difficulty in sleeping. A little later he began to have attacks of vomiting and severe headaches. These symptoms lasted for several years and were pronounced whenever the pressure of business was heaviest.

His first child was born when he was 34. At the age of 37, or two years before leukemia was apparent, his branch of the company lost \$70,000 during the year. This was an added source of anxiety to him and he took the responsibility for the loss. His second child was born four months before the diagnosis of leukemia was made. At this time, he was overworked and worried because of the company finances as well as his own. He developed an infection of his neck and during the care of this, leukemia was discovered.

Anxiety and worry concerning his family and company were not lessened with the diagnosis of leukemia but he became philosophic. He said that he believed there were spontaneous remissions and that he would have one. He read much concerning leukemia and he tried to help in caring for himself.

He stated that he had had definite mood swings all his life; some weeks he felt "on top of the world" other weeks he was "down in the dumps and every little job looked twice as big as it ought to." His leukemia was discovered in December 1933 and continued through March 1941, or over seven years. He died in Memorial Hospital, New York City, March 1941, and a necropsy revealed typical findings of chronic myeloid leukemia.

Case 5. P. H. was a 53 year old white man. He entered Lakeside Hospital, Cleveland, in the winter of 1939 where a diagnosis of chronic myeloid leukemia was made. In February 1939, a psychiatric interview was obtained. The patient had worried over small things his entire life. In 1918 he "worried himself sick about everything." He had been a caretaker on an estate and he had worried about his duties; he did not believe he was doing well and everything seemed to go wrong. He became depressed and could not sleep and he lost his appetite. The estate was then sold and he became caretaker on another. The owner committed suicide, but before this happened he had felt better and was doing rather well. The suicide was a shock to him. Following this episode he had worked on yet another estate for a period of eight years. While working on this estate, he was worried and sensitive to criticism. During this time, his father died and he became depressed. He worked night and day but seemed to be in a rut. He again changed his position and became even more worried. At this time he believed someone was poisoning the

pheasants he was raising and thought that this was being done to change the control of the estate. This led to a fight with another man on the estate.

In August 1938, he became extremely depressed and wanted to die. He thought people were making fun of him and believed that someone "had it in for him" and was plotting against him. He thought that "the world was wrong." Then he lost interest in everything and could neither eat nor sleep. He lost his self confidence, and was always afraid he would make mistakes. Although he had death wishes, he had no suicidal ideas. He cried a great deal, and he tried to be alone and would walk the streets. His depression grew worse until, in November 1938, he was physically sick. At this time he had pains in both hips and numbness and tingling from knees to feet. He had no vitality or energy and felt a pressure on top of his head and pain in the back of his neck. He thought he was going to die and "made a will and just waited." In February 1939, it was found that his spleen was enlarged and that his leukocyte count was elevated. The patient died in Lakeside Hospital, August 1941. The necropsy findings were typical of chronic myeloid leukemia.

Case 6. M. A., a 40 year old white woman, entered Jefferson Hospital, Philadelphia, in December 1946. A psychiatric interview was held in January 1947. The patient appeared pale, underweight and considerably older than the age of 40. She wept when she talked about her husband. She is married to a miner and has nine children. Her husband is an alcoholic who has been cruel and a poor provider. After twenty years of marital difficulty, she finally forced her husband to leave their home in October 1945. At present she has \$93 a month from Mother's Relief and a few dollars irregularly from her husband to care for her nine children.

She was one of four children. Her father was an alcoholic and he was unstable. She stopped school at the age of 14—the 6th grade—because she had to work and help support the family. Despite her difficult life there were few somatic complaints until two years ago when she began to be easily fatigued and lost weight. It was at this time that the difficulty with her husband became acute.

She is a Catholic and very religious. The impression of the interviewer was: life-long insecurity related to difficult environment and a lack of affection as a child. Her main defense was compliance, religion, patience and acceptance. It is difficult to evaluate the exact relationship between her emotional difficulties and her present disease, but it is apparent that the emotional difficulties have played a part in the development of the organic disease.

It was found in October 1946 that her spleen was enlarged and the leukocyte count was elevated. She is now being given treatment for chronic myeloid leukemia.

DISCUSSION

In this short series, only cases of chronic myeloid leukemia have been included. Psychiatric interviews, however, have been held with 3 patients with chronic lymphoid leukemia and only one of these has given much evidence of emotional difficulties in the background. One patient with chronic eosinophilic leukemia was also interviewed, and it was found that following an accident in the plant in which he worked he frequently had somatic symptoms when he was in the room in which the accident had occurred. Otherwise, there was little in his pre-leukemic history which might have acted to precipitate the disease.

Psychiatric interviews have not been held with patients with acute leukemia, nor have we examined the emotional background of either patients or parents of any of the childhood leukemias.

Clinical data of all types have been left out of this report because each case represented a typical picture of chronic myeloid leukemia. In only one of these patients, Case 4, was there any evidence in the pre-leukemic history of chemical or physical agents which might have precipitated the leukemia. This man worked in a rubber plant but he was not exposed to chemical agents.

Anxiety, depression and chronic worry affected 4 of the 6 patients of whom

case reports are given. Each of these 4 had conversion symptoms such as nausea, vomiting and loss of appetite. One had pain in his hips and a feeling of pressure at the top of his head. Three of these 4 had loss of appetite and sleeplessness. Three of these 4 cried easily so that it might be said that each of the 4 was somewhat emotionally unstable prior to the development of leukemia. One of the other 2 had had emotional strain as a girl and later hysteria, difficulties and disappointments because she married a man she did not wholly love. The sixth had lead a life of misery as a child and for twenty married years. It may not be entirely convincing that the material in such histories has precipitated the leukemic state. Heuper¹ has stated that the leukemic state has not been precipitated by emotional or psychic trauma. These histories, however, run somewhat contra to this statement.

Recently, it has been shown that in the past forty-five years there has been a marked increase in the incidence of leukemia.⁵ Drugs, industrial hazards, irradiation from x-ray and atomic sources, and the increased hazard of physical trauma of our age may have brought about this increase. The increased tempo of life in the past forty-five years, with its increased sources of anxiety, worry and emotional stress and strain, may also have aided in increasing the number of deaths from leukemia.

It seems to us that all cases of leukemia in adults should be studied for any and all factors which may have played a part in the precipitation of the disease and such a study should include emotional factors. Against a statistical study of emotional factors in all cases, there should be plotted a particular study of those cases in which other factors have been ruled out.

SUMMARY

The emotional background of 6 cases of chronic myeloid leukemia are reviewed after psychiatric interviews. In 4, emotional instability was of long standing and in these 4, chronic worry and anxiety seemed to be an integral part of the pre-leukemic history. One of the other 2 suffered emotional trauma early in life and one had lived a life of misery as a child and an adult. Further study of emotional factors in relation to pre-leukemic histories should be made.

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