PERNICIOUS ANEMIA TREATED WITH CITROVORUM FACTOR (LEUCOVORUM)

REPORT OF A CASE*

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It appears to be well established that the intramuscular administration of citrovorum factor (CF) to patients with pernicious anemia in relapse will induce hematologic and clinical improvement.1,3,4 More recently we have treated a group of patients with this compound by oral and intravenous routes. A detailed report of these studies will be presented later. The present communication is concerned with a patient with typical addisonian pernicious anemia who each day received 6.0 mg. of CF orally, and developed signs and symptoms indicative of subacute combined degeneration of the spinal cord.

REPORT OF CASE

J. K., a man, aged 52, was admitted to the hospital with the chief complaints of progressive exertional dyspnea, increasing weakness, pallor, and numbness of fingers and toes. The positive physical findings included pallor, icteric sclerae, sinus tachycardia, systolic murmur at the apex of the heart, liver enlarged 1 cm. below the right costal border, and diminished vibratory sensation at both ankles. No other abnormalities of the nervous system were observed. Laboratory studies revealed hyperchromic macrocytic anemia, histamine-fast achlorhydria, and 20.8 per cent of megaloblasts in the bone marrow. Roentgen examinations of the gastrointestinal tract, urinalyses and blood chemical findings were normal. The patient was treated daily with 6.0 mg. of CF orally for three months, followed by 3.0 mg. daily for two weeks. There was subjective improvement on the fifth day; appetite was greatly increased on the seventh day, and a peak reticulocytosis of 10 per cent was noted on the tenth day. The hemoglobin and erythrocytes reached normal levels ten weeks after treatment was begun (Fig. 1). Paresthesias of hands and feet disappeared but vibratory sensation was still diminished at the ankles. The patient returned to work after two months of treatment. During the latter part of the third month he reported paresthesias of the feet and legs. Fourteen weeks after CF therapy was started the patient complained of severe numbness of the feet and inability to walk, and stated that he had fallen twice. At this time the positive neurologic findings were: moderately severe ataxia, loss of sense of position of toes, and absence of vibratory sensation up to the level of the iliac crests. The blood count was normal. Treatment with CF was discontinued and the patient was given 30 micrograms of vitamin B₁₂ intramuscularly, weekly. After three weeks of therapy the ataxia was completely gone, the sense of position in the toes was normal, vibratory sensation was impaired only over the ankles, and the patient had only mild numbness of the toes. The blood count remained normal.

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DISCUSSION

From the foregoing data it is clear that the oral administration of CF induced a satisfactory hematologic and clinical remission in a patient with pernicious anemia in relapse, but did not prevent the development of subacute combined degeneration of the cord. The CF (Leucovorum) used in these studies was 5-formol-5,6,7,8-tetrahydropteroylglutamic acid and was synthetically prepared. It may act like folic acid by competing with glutamic acid in the metabolism of the central nervous system. The possibility also exists that CF may combine with vitamin B12, thereby causing a deficiency of the latter and upsetting the metabolism of the central nervous system. The above observations further confirm the efficacy of vitamin B12 in reversing neurologic disease in pernicious anemia.

SUMMARY

Oral administration for three months of 6.0 mg. of citrovorum factor to a patient with pernicious anemia induced a satisfactory remission, except that signs of subacute combined degeneration of the spinal cord appeared. Neurologic changes were reversed after this therapy was discontinued and vitamin B12 was administered parenterally.
REFERENCES


2. Jukes, T. H.: Personal communication to the authors.
