Colindale. These boroughs, with Lewisham, cover an area of 66 square miles (171 km.²) with a population of 950,000.

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A CASE OF CHRONIC NEUTROPENIA TREATED BY SPLENECTOMY

BY

J. R. ARMSTRONG, M.D.

Physician, Stracathro Hospital, Brechin, Angus

In view of the reports of chronic neutropenia which have recently appeared in the literature, the following case seems worthy of record.

Case Report

A motor-lorry driver aged 45 was admitted to hospital in March, 1947, suffering from an abscess in the perineum. His temperature was 100° F. (37.8° C.), pulse 82, and respirations 20. He was pale and sallow and had no symptoms beyond pain at the site of the abscess. This was incised, and, because of its failure to heal, he came under medical observation, when a chronic ulcer was found in the perineum, lying anteriorly to the rectum; the edges were hard and undermined, the base was unhealthy, and there was surrounding induration. A biopsy examination of the ulcer tissue did not reveal any specific characteristics. The Wassermann reaction test was negative. On May 27 the liver was enlarged three fingerbreadths below the costal margin and the spleen was also palpable. The blood showed a severe leucopenia, with a marked diminution in the number of neutrophil cells.

From May 9 to the end of June fever continued and the white corpuscles varied from 900 to 1,000 per c.mm., and a considerable reduction in the percentage of neutrophil cells was noticed. Most of the cells were very primitive, and some of these contained nucleoli and showed monocytoïd features. During June the liver and spleen were considerably enlarged and the patient developed an ischio-rectal abscess. The white cells varied between 1,200 and 2,000 per c.mm. Treatment with penicillin and pentnucleotide was given, and on June 13 the white cells numbered 2,000, but no granular leucocytes were seen in the film. Four weeks later the leucocytes still numbered only 1,000, and a blood film showed only one or two granulocytes. Nearly all the white cells were of the monocyte series. The ulcer in the perineum had by this time healed, and the patient was allowed to return home but was instructed to remain under observation.

In spite of treatment the white-cell count had failed to improve, and the patient left hospital with a leucopenia, hypochromic normocytic anaemia, and thrombocytopenia, and a normal bone marrow. His condition was thought to be due to hypersplenism, and it was decided that, if improvement did not occur or if deterioration should take place, he should return for splenectomy. On September 13 the

white cells were 3,850, haemoglobin 100%, platelets 188,000, bleeding-time 2 minutes, and the coagulation time 4 minutes. Splenectomy was performed on September 25. On the 27th the white cells numbered 12,600 (polymorphs 80%, lymphocytes 14%, monocytes 6%) and platelets 300,000 per c.mm. After the operation the patient developed a left-sided basal pneumonia, but eventually made a satisfactory recovery and returned home on December 17. A histological report on the spleen did not indicate any changes characteristic of any particular disease.

From December, 1947, until October, 1948, the patient remained in good health, but was then readmitted to hospital on account of a streptococcal sore throat. A blood examination at this time showed: red cells, 5,370,000; white cells, 4,600 (neutrophils 5%, lymphocytes 78%, eosinophils 1%, basophils 3%, Türk cells 4%, monocytes 9%); colour index 1. The erythrocytes were normocytic and normochromic. The platelets were numerous and large, but there was a marked neutropenia, and sternal puncture revealed a moderately cellular normal marrow. The myeloid series of cells consisted mainly of myelocytes and metamyelocytes and a few scanty myeloblasts. The blood uric acid at this time was 3.4 mg. per 100 ml. (serum). Blood counts gave the following results, along with occasional myelocytes:

	November, 1948				December, 1948			January, 1949	
	10th	14th	21st	29th	9th	13th	23rd	5th	13th
W.B.C...	4,800	5,100	5,500	4,500	5,500	9,000	8,800	4,300	4,200
Neutrophils..	7%	6%	2%	13%	33%	49%	4%	3%	2%
Lymphocytes..	71%	70%	79%	66%	53%	38%	78%	80%	86%
Monocytes..	20%	17%	11%	14%	12%	13%	15%	13%	10%
Eosinophils..	2%	6%	7%	5%	1%	—	—	1%	—
Basophils	0%	1%	1%	2%	1%	—	3%	3%	2%

On November 9 the patient developed an irritable erythematous rash on his arms and legs, but this cleared up satisfactorily. On November 29 nodular inflammatory areas appeared in both buttocks, and on December 13 two abscesses were opened and drained. He was finally discharged from hospital in good health on January 13, 1949; the white cells at this time numbered 4,280, with 20% neutrophils.

When examined on January 10, 1950, he was found to be in good health and weighed 14 stone (88.9 kg.). He had completely recovered from his illness, but there was still a relative neutropenia, the figures of the blood count being: red cells, 5,320,000; white cells, 7,000 (neutrophils 33%, lymphocytes 59%, monocytes 4.5%, eosinophils 1.5%, basophils 2%); P.C.V., 52%; C.I., 0.85; M.C.V., 98 μ^3 ; M.C.H.C., 28%. The red blood cells were of good size and shape, but hypochromic. Platelets were numerous. A relative neutropenia with a shift to the left was noted.

Discussion

In this case a diagnosis of hypersplenism was made and the patient underwent splenectomy. It is interesting to note that after the operation, whilst his general condition improved, the white-cell count remained for a long time at a low level and at the last blood examination there was still a relative neutropenia. Furthermore, histological examination of the spleen did not show any abnormality.

Many cases of neutropenia have recently been recorded. Primary splenic neutropenia was originally described by Wiseman and Doan (1939, 1942), who emphasize the following characteristics: profound granulocytopenia, hyperplasia of the bone marrow, splenomegaly, and the curative effect of splenectomy.

At no time did my patient show any evidence of haemolytic anaemia, and, although the spleen was

removed, the white cells, and in particular the neutrophils, did not appreciably increase in number and the bone marrow was normal. It would appear that the patient when last seen was still suffering from a chronic neutropenia.

Reznikoff (1946) has pointed out that the characteristics of chronic neutropenia consist of splenomegaly and hyperplasia of the bone marrow, especially the myelogenous elements, and has stressed the importance of the presence of hyperplasia, or at least the absence of hypoplasia of the bone marrow, before splenectomy is contemplated. Moore and Bierbaum (1939) reported on the treatment of chronic neutropenia by splenectomy.

Primary splenic neutropenia has been described by Rogers and Hall (1945), who give a complete list of the possible causes of the condition and stress the following facts in the pathological details: inhibition of granulopoiesis in the bone marrow; arrest of maturation of blood cells; and excessive destruction of neutrophils.

Other writers consider this relatively newly recognized splenic syndrome of neutropenia to be closely related to congenital icterus and thrombocytopenic purpura, and it has been pointed out that in any one of these conditions splenectomy is almost invariably followed by an increase in all the circulating blood elements. In the case of chronic neutropenia, however, it appears that an increase in the white cells does not always follow splenectomy, and this is what happened in the present case. Hattersley (1947) has described a case of severe chronic neutropenia occurring in a patient who after ten years eventually underwent splenectomy and whose spleen was found to be of normal size.

Fullerton and Duguid (1949) described a case of cyclical agranulocytosis occurring in a patient who showed improvement after splenectomy, but who still had a persistently low count, although polymorphonuclear leucocytes never completely disappeared from the blood. Splenic neutropenia is often precipitated by infection, or at least blood findings become apparent during and after infection; and Langston, White, and Ashley (1945) suggested that a neutropenic individual is more susceptible to chance infections and that the infection draws attention to the hitherto unsuspected neutrophil deficiency.

Rogers and Hall have described primary splenic neutropenia and have mentioned associated liver disease. They postulated the existence of a leucolysin which is found in the spleen and of suppressed leucopoiesis in the bone marrow.

Kracke and Riser (1949) reported on nine cases of hypersplenism and enumerated the criteria for this condition as follows: a spleen that is clinically enlarged; depleted cell values of the blood, including neutropenia or anaemia; demonstration of the fact that the bone marrow production is not impaired; and demonstration of splenic overactivity by the adrenaline test. These writers recommend splenectomy in cases showing functional overactivity of the spleen. They point out, however, that careful selection of such cases is necessary, because splenectomy is a serious operation and not one which should be lightly undertaken.

Summary

A case of chronic neutropenia occurring in a patient who has undergone splenectomy is described.

Splenectomy seems to have improved the general condition, while the blood continues to show a relative neutropenia.

I am indebted to Dr. A. W. Hendry for his criticism and advice in the presentation of this case.

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"REFRACTORY ANAEMIA" AFTER ARSPHENAMINE DIGLUCOSIDE (STABILARSAN)

BY

C. N. PARTINGTON, M.B., Ch.B., D.C.P.
Deputy Director, Dorset County Laboratory

AND

WATSON ROGERS, M.B., B.Ch.

Aplastic anaemia is a rare complication of organic arsenical therapy; Wintrobe (1946) records recovery from the condition, but this is not invariable. The patient here described, when first seen, showed grave anaemia, leucopenia, thrombocytopenia, and the symptoms of haemoglobin deficiency. The successful use of dimercaprol ("B.A.L.") in post-arsenical dyscrasias has been recorded by Eagle (1946), and it was decided to use this drug in addition to other generally accepted methods of treatment, as our case showed features in common with those described by this author.

Case Report

The patient, a man aged 31, was admitted to hospital on November 13, 1949. In March, 1949, he had presented with a secondary syphilitic rash. The Wassermann reaction and Kahn test were both strongly positive, and he was treated at the venereal disease clinic as follows: (1) From March 11 to May 17 he received 10 weekly injections of "stabilarsan," 0.6 g. and bismuth, 0.3 g. (total: 6 g. of stabilarsan, 3 g. of bismuth). He also received a five-day course of procaine penicillin, 6,000,000 units being given during this period. (2) From August 23 to October 11 he received a further six weekly injections, a total of 3.5 g. of stabilarsan and 1.7 g. of bismuth being given.

He was next seen on November 10, when he complained of malaise, breathlessness, and inability to work. On examination he was clinically anaemic, the pulse rate was 100, but there were no other abnormal physical signs. There was no jaundice, skin eruption, or enlargement of spleen or lymph nodes. His haemoglobin was found to be 28% (100% = 14.8 g.). He was regarded as a case of aplastic anaemia following organic arsenical treatment.

On November 14 he was transfused with 2 pints (1.14 litres) of fresh blood of his own group (Group O, D positive), and a further 2 pints was given on the 16th. There were no reactions. His haemoglobin was then 40%. Treatment with dimercaprol was started on the 16th, 2 ml. of 5% solution in arachis oil being given four-hourly for 12 hours, then twice daily for four days. A further two half-pints of fresh packed blood cells were given at the end of this course as his haemoglobin was still only 51%. The patient said he felt well and was anxious to return home. He was therefore discharged the next day to continue