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)

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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

treatment as an out-patient. Throughout his stay in hospital he received, in addition to the treatment mentioned: from November 16 to 22 compound ferrous sulphate, *B.P.C.*, 1 tablet thrice daily; procaine penicillin, 300,000 units daily; and on alternate days from November 13 to 19 sodium nucleinate, 1 ml.

After discharge he continued to make progress, as the haematological reports show. The ferrous sulphate was continued for two months, but other treatments were stopped.

The regular haematological findings are set out in the Table. Other findings were: November 16: clotting-time (Lee and White method), 27 minutes (normal, 4–7 minutes); bleeding-time (Duke's method), 19 minutes (normal, 2–5 minutes); blood Group O, D positive; icterus index, 2 units; prothrombin time (modified Quick's method using "difco" thromboplastin), 19 seconds (normal, 15 seconds). November 23: clotting-time, 20 minutes; bleeding-time, 17 minutes; icterus index, 2 units; prothrombin time, 17 seconds. On February 8 and November 15, 1950, the bleeding and clotting times were normal.

Haematological Findings

	12/11/49	15/11/49	16/11/49	18/11/49	23/11/49	30/11/49
Hb (100% = 14·8 g.)	28%	39%	40%	51%	58%	70%
R.B.C. ..	2,100,000	—	2,300,000	2,800,000	3,400,000	3,600,000
Reticulocytes ..	None seen	—	<0·1%	1%	2%	3%
W.B.C. ..	1,900	—	1,100	1,500	1,600	2,300
Neutrophil polymorphs	24%	27%	28%	22%	25%	43%
Large lymphocytes	16%	15%	16%	18%	12%	
Small lymphocytes	60%	58%	56%	60%	61%	52%
Monocytes	—	—	—	—	2%	5%
Platelets ..	—	60,000	65,000	—	—	—

	7/12/49	14/12/49	28/12/49	8/2/50	15/3/50	15/11/50
Haemoglobin ..	71%	69%	80%	82%	95%	105%
R.B.C. ..	3,000,000	3,300,000	3,600,000	4,200,000	5,000,000	5,500,000
Reticulocytes ..	2%	3%	1%	0·5%	0·6%	0·3%
W.B.C. ..	2,400	3,700	4,000	5,400	5,300	5,000
Neutrophil polymorphs	66%	62%	59%	57%	60%	62%
Eosinophils		3%	1%	2%	3%	6%
Lymphocytes ..	30%	30%	39%	37%	35%	30%
Monocytes	4%	5%	1%	4%	2%	2%
Platelets ..	75,000	180,000	170,000	150,000	200,000	200,000

Discussion

It will be seen that the platelets returned to normal in one month and the white cells in three months. These findings agree with those of Hart and Humble (1949) in their case of aplastic anaemia following neoarsphenamine, illustrating that the neutropenia is later in recovering. In the early stages the lymphocytes were divided into large and small, as a number of the former were atypical, possessing a large oval nucleus and abundant bluish-grey cytoplasm, with many azure granules. Eosinophils were not seen during the first seven examinations, although a minimum of 200 cells were counted. The title of aplastic anaemia is not given, as we have no proof of the state of the bone marrow. Sternal puncture was considered, but in view of the greatly prolonged clotting and bleeding times, and the strongly positive capillary resistance test in two minutes with pressure at 84 mm. Hg, it was thought that the risks involved outweighed the academic indications. We have therefore preferred to use the term "refractory anaemia."

Eagle states that in 10 of 11 patients with arsenical agranulocytosis who were given dimercaprol there followed an increase in the total white count and an even more pronounced increase in the proportion of polymorphs. He says that, in some, this change was apparent in two days and the white count approached normal in seven days. His eleventh patient, who showed in addition a reduction in the number of platelets, died on the fourth day. This author claims that dimercaprol had no effect in three cases of aplastic anaemia occurring as a complication of arsenotherapy. Although in our patient the peripheral blood did not show initially the extreme degrees of changes which have been noted in some cases, they were nevertheless well marked. The favourable response to treatment, although providing no absolute proof that it was due to dimercaprol, does suggest that it is worth a trial.

Summary

A case of "refractory anaemia" following arsphenamine diglucoside ("stabilarsan") administration is described. The peripheral blood showed anaemia, leucopenia (particularly granulocytopenia), and thrombocytopenia. Response was observed shortly after the usual therapy and dimercaprol, and almost full recovery occurred within three months.

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Medical Memoranda

A Case of Sjögren's Disease with Scleroderma

The following case is of interest on account of the occurrence of Sjögren's disease in the male and because, like Sheldon's (1938) case, it is associated with scleroderma and pigmentation of the legs.

Case Report

A man now aged 59 began to complain of symptoms in his legs and feet soon after the 1914–18 war. He had had "trench feet." in 1918, but very mildly, so that he was never in hospital for this, and significant symptoms developed only gradually over the course of years. They consisted of cramping pains in his feet and in his legs below the knees, always worse if the limbs were cold, if he stood for long, or if he walked very far. After standing his legs became swollen and discoloured. These pains had steadily worsened over the years, so that, whilst he did manage to work intermittently as a farm labourer until 1939, he had not been able to do so since.

In 1917 his teeth broke off and the gums became rotten, and in 1925 all the teeth were extracted and dentures fitted. Dryness of the mouth was first noticed in 1919 and has persisted ever since, so that he can swallow dry food such as bread only if he takes water with it. Dryness of the eyes was first definitely noticed a few months ago, when, being depressed about his legs, he found himself unable to weep; but it could have been present much before, and he has long known that his eyes would burn if exposed to a wind and that he dared not face the sun. The eyes have, however, never been acutely inflamed or ulcerated. Neither salivary nor lacrimal glands have ever been swollen, nor has he suffered from mumps. His skin, he says, is usually dry and often seems to be "hot and burning"; he sweats a little on the palms of his hands, but hardly at all on brow, axillae, and other parts. His hands are not unduly sensitive to cold, but his wrists and ankles will swell if he keeps them long in water. Otherwise his health has always been fairly good, although for the past 10 years or so there