some ignorant association with the idea of hypothyroidism, cretinism, and imbecility. Another practitioner⁸ has seen a patient who took thyroid in considerable doses covertly; this patient, a druggist's wife, had phlegmasia alba dolens after childbirth, and she may have formed the idea that the condition of her leg was that of myxoedema. The continued use of thyroid in these cases points to there being some subjective tonic effect.

In a series of cases of thyrotoxicosis—that is, cases of not fully developed Basedow's (Graves's) disease—reported by Lublin,⁹ about half had no rise of basal metabolic rate. Some of these were "fat Basedow," and some were not benefited by operation on the thyroid, but no data are given indicating the possibility that any of these cases were similar to those now reported.

SEVERE MENORRHAGIA DUE TO CHRONIC THROMBOCYTOPENIC PURPURA, CURED BY SPLENECTOMY

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Cases of successful splenectomy for essential thrombocytopenia (purpura haemorrhagica) are sufficiently rare to merit detailed description. In the case here reported, in addition to the extremely satisfactory end-result which followed the operation, there were several features of special interest, which emphasize some of the less generally recognized features of the chronic form of this disease.

In the first place the patient was a young woman, in whom the only manifestation of the haemorrhagic state was a recurrent symptomless bleeding from one mucous membrane only—that lining the uterus. Thus the primary condition might easily have been overlooked altogether. Although there were no other manifestations of a haemorrhagic state it was possible, by means of a complete blood examination and a few simple clinical tests, to demonstrate that a latent purpuric state was present and that the recurrent bleeding was in all probability due to it. Finally, it was possible to make continuous detailed examinations of the blood before and after the spleen was removed, and to follow the progress of the case up to the time of publication, ten months later. A chart has been constructed which shows the most important changes observed during the first two months.

Case Record

The patient was a single girl aged 25, an office clerk, who complained of excessive menstruation, which rendered her severely anaemic and, ultimately, quite unfit for work. Her periods commenced at 14 years of age, and were at first irregular, but the loss was not abnormal. From the age of 17 to 21 years the periods were regular, and the loss normal in amount. For the last three years there had been severe menorrhagia: both the loss and the duration of the periods had increased. During this time she became severely anaemic, but would partially recover quite quickly, only to be reduced once more by another bleeding. Sometimes the bleeding was almost continuous for several months together, there being no complete cessation. At other times, when the period could be defined, clots were passed in the second half of menstruation. There was no pain, except when these clots were passed. The patient did not complain of any other trouble, but admitted that she once bled rather excessively following a tooth extraction. There was no history of spontaneous

Summary

An account is given of three cases of thyroid addiction. Two of them, both in women, were severe; the third, that of a man, was less so. The clinical notes are followed by a short discussion.

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bruising. Neither of her parents nor any member of the family had ever bled excessively, or shown any symptoms of a haemorrhagic state.

Examination.—She was examined from time to time at the York County Hospital, where blood counts were made, and she was treated for a time with drugs, sera, and intramuscular whole blood, none of which effected an improvement in her condition. Examination under anaesthesia revealed no abnormality in the pelvis, and finally she was sent to one of us (C. O.) by Dr. Kathleen Bland, who wished to know if radium treatment was advisable. In August, 1933, she was admitted to the Women's Hospital, Leeds, and a complete haematological and general examination was made. The blood examination on admission was as follows: haemoglobin, 40 per cent.; red blood cells, 3,080,000 per c.mm.; colour index, 0.66; white blood cells, 6,700 per c.mm. (differential count—neutrophils 70 per cent., eosinophils 0.5 per cent., basophils nil, lymphocytes 21.5 per cent., monocytes 8 per cent.); platelets, 50,000; bleeding time, 13 and 19 minutes; coagulation time, 3½ minutes.

On clinical examination, apart from the appearance of anaemia in the skin and mucous membranes, there was nothing for special comment. The temperature was normal. The tongue, mouth, and pharynx were normal. There were no purpuric or urticarial lesions of the skin and mucous membranes. The spleen was not palpable.

Progress.—While the patient was in hospital she had two periods with a short interval between. At both, especially the first, there was severe bleeding, and the anaemia increased in severity. So critical did the condition of the patient become that two transfusions were given, and both afforded considerable temporary relief. The blood examination, together with the information provided by previous blood counts taken at York County Hospital, which had shown platelets of less than 40,000 per c.mm. on two occasions, immediately suggested the possibility of chronic idiopathic thrombocytopenic purpura as a cause for the continued excessive bleeding, despite the fact that there was no history of a purpuric rash, spontaneous bruising, or bleeding from other mucous membranes. The diagnosis was supported by the production of a fine purpuric rash in the arm subject to venous engorgement for twenty minutes by compression with a sphygmomanometer armlet. Light percussion over bony prominences, however, produced only very faint ecchymoses. The platelet count on the day these examinations were made was 60,000 per c.mm. Examination of the skin capillaries, by means of the capillary microscope under varying conditions of pressure, did not reveal any abnormality.

Operation.—In view of the critical condition of the patient and the favourable results of splenectomy, as first carried out by Kaznelson, it was recommended that the spleen should be removed in this case. Lord Moynihan kindly saw this patient, concurred, and agreed to remove the spleen. This was carried out forthwith. At the operation there was very free oozing from the abdominal wound. The spleen was slightly enlarged and was adherent to the parietes at one point, but no accessory spleens were encountered. The vessels of the pedicle were ligatured, and the organ was successfully removed. During the closure of the abdominal wall the amount of bleeding was notably less, and this was commented upon by the surgeon.

After-progress.—A blood count, taken within an hour of the ligation of the splenic vessels, was as follows—one taken the day before operation is shown for contrast:

	One Day before Operation	One Hour after Operation
Haemoglobin ...	50 per cent.	36 per cent.
Red blood cells ...	3,550,000	2,500,000
White blood cells ...	7,100	6,000
Platelets ...	30,000	85,000
Bleeding time ...	19 min.	2½ min.

The subsequent progress of the case can best be followed in the chart appended. The chief interest naturally lies in the quantitative changes in the platelets and in the improvement in the bleeding time. The former increased rapidly after splenectomy, and reached a maximum of 970,000 per c.mm. on the fifth day (much earlier than was expected); they then fell quickly to about 650,000 on the seventh day, and, after a temporary rise again on the eleventh day, reached a level between 500,000 and 600,000, where they remained until the twentieth day. They then fell gradually below

The most obvious feature of the microscopical picture is the increase in the pulp. This is composed of a congeries of well-defined blood sinuses, with fairly large and prominent lumina. These still contain numerous red blood corpuscles, together with many leucocytes. The walls are thickened and cellular, and the endothelial lining is unusually prominent and well defined. The Malpighian bodies are widely separated and rather small in size, but otherwise present in general, normal characters. In several places, however, small foci of cellular proliferation of a peculiar kind are present, nearly always in relation to, or actually embedded in, a Malpighian body. They are composed of loosely arranged aggregations of large cells of endothelioid or reticular type, each with abundant cytoplasm and round or oval nuclei, with a clear-cut nuclear membrane and from one to four nucleoli. The cells are irregular in size and shape, and ill-defined at the margins, but there is no evidence of fusion to form giant cells. Apart from these

Chart constructed to show the changes in the haemoglobin, red blood corpuscles, reticulocytes, platelets, bleeding and coagulation time, (1) at various times over a period of two years before admission, (2) after admission and immediately before operation, (3) after the operation of splenectomy.

500,000 and the last count made was 390,000, six months after the operation. The bleeding time improved immediately after the operation, being reduced from nineteen to two and a half minutes. There was a reticulocyte crisis of 11 per cent. on the seventh day. The red cells and haemoglobin slowly increased under the influence of iron by mouth, and were practically normal after three months.

In other respects the post-operative course was uneventful. During the few days when the platelets were so extraordinarily numerous, thyroid extract was given to minimize the chance of thrombosis. The effect upon menstruation was remarkable. On the sixth day after operation the patient had a short period lasting three days—"the first normal period for years." A period was then missed, and thereafter they became perfectly regular, the loss being normal in quantity, and lasting four or five days only. The patient has increased in weight, and has resumed her work and all her social and athletic activities.

Pathology of the Spleen

The greater part of the convex surface was covered by old fibrous adhesions and tags of attached omentum. On the concave aspect there was a small area of similar adhesion across the middle. The organ after removal was not enlarged, being about normal in size, but this was after a quantity of blood had drained away. On section, the cut surface was smooth, homogeneous, and congested, with the Malpighian bodies small and widely separated. The tissue was fairly firm but not fibrous.

negative features the appearance of these follicles closely resembles that figured and described by Kettle (*Journ. Path. and Bact.*, 1919-20, xxiii, 413, Fig. 7) in one of his cases of splenomegaly associated with secondary anaemia. As in Kettle's case, the resemblance to early tubercle follicles is very close, but central caseation as well as giant-cell formation is absent. In contrast to Kettle's case, there is little or no formation of collagen fibrils at the periphery of the foci. A search for tubercle bacilli yielded negative results. It is suggested that this appearance may be an early example of the lesion described by Kettle.

Summary

A case is recorded of chronic thrombocytopenic purpura in a woman aged 25. The only symptom was recurrent menorrhagia causing severe anaemia. There was no bleeding from any other source, no purpura or spontaneous bruising, and the spleen was not palpable. The latent purpuric state was revealed, however, by the capillary resistance test. Splenectomy has cured the menorrhagia and restored the patient to health. The quantitative changes in the blood before and after operation were followed daily, and are presented as a chart, and the histology of the spleen is described.

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