In Hartzell's case¹⁰ more extensive cyst formation appears as the only striking difference between the findings he describes and those presented by our case.

The microscopic findings in our case were practically identical with those described by the other writers. In discussing the subject of benign epithelioma Hartzell¹⁰ states:

Either neoplasms differing widely in origin and nature may resemble one another so closely histologically as to be practically indistinguishable, which is unlikely; or those who believed that they were able to trace the origin of these growths to the sweat gland ducts or to the blood vessels based their conclusions on insufficient evidence.

We desire to thank Dr. Hartzell for making an examination of some of the sections from the case herein reported.

Perthes¹¹ has described, both clinically and histologically, two cases, each of benign cystic epithelioma of the lip in the Chinese. It has been also demonstrated that clinically benign neoplasms of the skin originate both from the deeper layers of the cutaneous epithelium and from the hair follicles.

A STUDY OF THE BLOOD IN BANTI'S DISEASE BEFORE AND AFTER SPLENECTOMY.*

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The patient on whose case this study is based was admitted to the University Hospital, Nov. 15, 1904, and presented the following history:

Patient.—Mr. C. F. H., aged 38, traveling man, married, having 3 children in good health, was referred by Dr. W. E. Patterson and entered the hospital complaining of feeling of heaviness in abdomen with bloating after meals.

History.—Father died at age of 72 years from hernia; mother aged 72, alive and well; three sisters alive and well; one brother died, aged 44, of typhoid fever.

Patient used alcohol moderately until beginning of present illness; tea and coffee moderately. He has had gonorrhea a number of times; denies lues; had common diseases of childhood. He had spinal meningitis at 7 years of age. While in the South, at the age of 21, he had malarial fever, paroxysms occurring, as he claims, only once a week. These symptoms persisted for 3 or 4 years, or until patient moved to Colorado, when they soon ceased and have not recurred. There was no history of ague-cake spleen. Patient was jaundiced at the time. In 1890 an abscess developed on the left side of chest, which was opened, and failed to close for one year, healing and breaking out in different points on the surrounding area.

History of Present Trouble.—In 1902 patient began to feel depressed, had aching and heavy feeling in the left side, with a sharp pain under the ribs on exertion; continued to work, but nearly fainted a number of times. At Christmas, 1902, his wife first noticed a tumor on the left side of the abdomen. Soon after this the patient consulted Dr. Gilchrist of Iowa City, who made a diagnosis of splenic tumor. In September, 1902, the patient went to Chicago and received several x-ray

treatments, but without help, and developed a painful burn on left side of the abdomen over enlarged spleen area, which has not yet healed, but is no longer painful. During the last two years patient had done no work and, except for burn, has felt fairly well. His appetite is good, bowels are regular and he sleeps fairly well. On exertion he tires easily and suffers with dyspnea. There is no hematemesis, but he has frequent attacks of nosebleed, although these have been present more or less since youth. In April, 1904, he had a marked distension of the abdomen for 3 days, for which paracentesis abdominis was advised but not carried out.

Present Condition.—Nov. 15, 1904: Patient is moderately emaciated, has some cachexia, skin is slightly yellow, sclera is jaundiced; pulse 94, regular; fair tension, vessels soft and elastic, systolic pressure 110; heart's area not increased; soft systolic murmur heard over entire pericardium, otherwise sounds are normal. Lungs are normal.

Abdomen is distended, especially in left upper quadrant. There is a diffuse scar on left side, the center of which is unhealed; palpation reveals a large tumor on left side of abdomen which corresponds to the spleen, the lower border of which extends 10.5 cm. below umbilicus level and the right border 8.5 cm. beyond the midline. The surface is smooth except the right border, which is deeply notched. The liver is distinctly palpable, surface not tender but irregular. Small amount of free fluid in the abdomen. Kidneys are not palpable; urine is negative. There are no enlarged lymph nodes.

Blood: Hemoglobin, 65 per cent. (v. Fleischl); red cells, 2,798,800; whites, 3,689. Differential count of leucocytes: Polymorphonuclear neutrophiles, 75.5 per cent; small mononuclears, 16 per cent.; large mononuclears, 3.3 per cent.; eosinophiles, 2.63 per cent.; transitionals, 1.12 per cent.; mast cells, .37 per cent.; indeterminates, .93 per cent. Daily examinations of the blood were made for 12 days without disclosing any marked change.

Diagnosis.—The splenomegaly, leucopenia and secondary anemia permitted a diagnosis of splenic anemia, but the mild icterus, suspicion of ascites and hepatic cirrhosis, which was subsequently corroborated at the operation for splenectomy, made a diagnosis of so-called Banti's disease seem more applicable.

Operation.—On Nov. 28, 1904, a splenectomy was performed by Dr. William Jepson. At the operation the liver was found to be enlarged, surface granular and marked by deep, irregular scars. About 500 c.c. of clear serous fluid was removed from the abdominal cavity. Recovery from the operation was uneventful.

Postoperative History.—The blood changes following the operation were closely followed. Five days after operation there was a total white count of 15,400, and from this time until December 10, 12 days after operation, there was a steady increase except for two slight variations in the white blood count, which reached 24,000 on December 10. It fell suddenly to 10,200 on December 14. On December 17 there was a slight increase in the count, showing 14,000. From then on there was a steady decrease. On the day of discharge, Jan. 4, 1905, the total white count was 6,000.

Red Blood Corpuscles: Immediately following the operation there was a sudden fall, reaching 3,120,000 on December 3. 5 days after operation. From this time on there was a steady uniform increase up to December 21, when the count was 4,200,000, higher by 1,500,000 than on admission. On January 4, the day of discharge, the count was a trifle less than on December 21, but still over 4,000,000.

Hemoglobin: The hemoglobin on admission was 65 per cent., estimated by the v. Fleischl instrument. It ran a course parallel with the erythrocytes, and the day of discharge showed 85 per cent.

Differential Counts: Five days after operation a count showed the following: Polymorphonuclear neutrophiles, 72 per cent.; small mononuclears, 11.4 per cent.; large mononuclears, 15 per cent.; eosinophiles, 1 per cent. This count is of interest as it shows the great increase in relative numbers of the large mononuclears from 3.3 per cent. before operation to

10. Hartzell: "Benign Cystic Epithelioma and Its Relationship to So-called Syringocystadenoma, Syringocystoma and Hemangio-Endothelioma." Brit. Jour. of Dermatology, October, 1904, p. 361.

11. Perthes: "Ueber gutartige Epitheliome, wahrscheinlich congenitalen Ursprungs," Deuts. Zeits. f. Chir., 1905-1906, p. 283.

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

15 per cent. 5 days after operation. There is a falling per cent. in the number of small mononuclears and polymorphonuclears.

December 6 a count revealed: Polymorphonuclear neutrophils, 65.4 per cent.; large mononuclears, 15.7 per cent.; small mononuclears, 12.7 per cent.; polymorphonuclear eosinophiles, 3.5 per cent.; transitionals, 2.1 per cent.; mast cells, 0; indeterminates, .43 per cent.; 697 cells counted. This count shows a marked increase in large mononuclears, a slight increase in eosinophiles and transitionals, and a decrease in polymorphonuclear neutrophils and small mononuclears, with total absence of mast cells.

On December 10, the day of the highest leucocytosis, a strange phenomenon was noticed. The small mononuclears suddenly increased from 12.6 per cent. in the previous blood count to 23.5 per cent.; the large mononuclears fell from 15.7 per cent. to 8.1 per cent., the count being as follows: Polymorphonuclear neutrophils, 65.4 per cent.; polymorphonuclear eosinophiles, 3.5 per cent.; small mononuclears, 23.5 per cent.; large mononuclears, 8.1 per cent.; mast cells, 0; indeterminates, 0; 429 cells counted. The subsequent changes in the different blood elements are revealed in the table.

TABLE OF BLOOD EXAMINATIONS.

Date	Hemoglobin %	Red	White	Polymorpho- nuclears %	Small mono- nuclears %	Large mono- nuclears %	Eosin %	Transit. %	Mast. %	Nucl. red	No. of white cells counted
11/15, '04.	65	2,789,000	3,689	75.5	16.	3.3	2.63	1.12	.37	1	420
11/26, '04.	65	3,416,000	4,800	75.5	16.	3.3	2.63	1.12	....	1	560
11/28, '04.	Splenectomy										
11/30, '04.	60	2,820,000	13,200	56.1	12.6	9.8	1.15	1.	....	1	620
12/2, '04.	65	3,120,000	15,400	72.	11.4	15.	1.	....	....	1	540
12/6, '04.	75	3,645,000	18,000	65.4	12.7	15.7	3.5	2.1	....	1	697
12/10, '04.	75	3,520,000	24,000	65.5	23.5	8.1	3.4	....	....	1	429
12/14, '04.	70	3,632,000	10,200	60.6	20.6	11.8	4.4	1.6	.46	1	432
12/17, '04.	75	3,864,000	14,000	65.	21.1	10.7	1.2	.25	.12	1	789
12/21, '04.	80	4,300,000	12,120	63.2	19.6	11.2	2.1	.32	....	1	560
12/28, '04.	80	4,180,000	48,600	64.8	20.	11.6	1.8	.48	.18	1	480
1/2, '05.	85	4,165,000	7,100	63.6	26.2	9.4	2.4	1.2	.24	1	450
1/4, '05.	85	4,120,000	6,000	60.2	24.6	10.8	2.9	.42	....	1	510
9/25, '05.	75	3,820,000	6,800	64.4	22.4	10.4	2.8	....	....	1	420
9/28, '05.	75	3,910,000	7,100	61.8	24.8	9.2	3.2	....	....	1	620
5/5, '06.	65	4,288,000	12,000	46.7	36.1	8.2	2.1	....	1.	1	304
5/8, '06.	70	4,608,000	11,000	47.1	38.5	8.07	4.9	.45	.9	1	223

When he appeared at the hospital for examination, in September, 1905, his general condition was much improved, but he was distressed by a discharging fistula at the site of a drain placed in the left side of the abdomen at the time of the operation. After receiving surgical treatment for this condition he returned home.

He was readmitted May 2, 1906, at which time his general health appeared good, but he was troubled by a marked distension of the abdomen. Examination revealed a high degree of ascites present, and 1,400 c.c. of clear serous fluid was removed May 8, 1906. Although the number of white cells in the last count has increased to 11,000, the lymphocytosis still prevails. At no time has an enlargement of the lymph nodes or changes in the thyroid gland been observed.

REMARKS.

Summarizing the results obtained in the study of the blood of our patient, we have, first, before operation, blood characterized by anemia of secondary type, low per cent. of hemoglobin and leucopenia; second, after splenectomy a slight fall in red cells, then a rise, a leucocytosis reaching its maximum twelve days after operation and characterized by a relative increase in the mononuclear leucocytes, especially the large mononuclears; third, the absence of myelocytes and the scarcity of nucleated reds, both before and after splenectomy.

The blood examination in the case under consideration having been described, it may be of interest to make comparison with the findings of others. Most observers have noticed a decrease in erythrocytes immediately after

operation, but Jordan¹ states they may increase as frequently as decrease. What the factors are that bring about the change can not be definitely stated. White says that, as a rule, after laparotomy of any kind, there is a slight increase of white blood cells and a decrease in the red cells, apparently due to ether.

LITERATURE.

The reported cases of splenectomy, as a rule, show a leucocytosis following the operation. Although there is a general increase of all the different kinds of white elements normally present in the blood, most of the cases show a relatively larger increase in the lymphocytes. In this case the large mononuclear leucocytes showed relatively the greatest increase. A number of observers have noted that a year or two after splenectomy the eosinophiles will show an increase in numbers. The hemoglobin follows the variation in reds very closely. Splenectomy is followed by an increase in size of the lymphatic glands, and this may possibly explain the lymphocytosis so frequently seen. Some report enlargement of the thyroid gland and hyperemia of the bone marrow.

The blood findings in our case, before splenectomy, of 3,796,000 red cells, 3,680 whites and hemoglobin 65 per cent., is typical of those usually described in connection with splenic anemia. In Osler's² series of cases the average was 3,425,000 red cells, 4,250 whites and 47 per cent. hemoglobin, nucleated reds and myelocytes being rare. The differential counts of uncomplicated cases in Lössen's³ summary show nothing of significance. Of the 20 cases of Banti's disease reported as such by Banti,⁴ Osler,² Cohen and Rosenberger,⁵ Taylor,⁶ Bessel-Hagen,⁷ Umber,⁸ Kausch,⁹ Pribram,¹⁰ Chiari,¹¹ Moor,¹² Roger,¹³ Kast,¹⁴ Galvagni¹⁵ and Lössen³ the blood findings are typical of those of splenic anemia.

The more interesting blood findings seen after splenectomy are also essentially the same in the two disease conditions. Umber⁸ has reported one of the most typical cases of Banti's disease, having had the opportunity of observing the patient a long time, while it presented the characters of a splenic anemia, and then with the symptom complex of Banti before and after splenectomy, noted a blood finding before splenectomy of hemoglobin 45 per cent., red cells 2,483,000, white cells 8,000, leucocytes proportionally normal. Soon after the operation an increase occurred in the number of red and white cells and hemoglobin percentage. Three months following the splenectomy the hemoglobin was 90 per cent., red cells 4,578,000, white cells 11,700, the polymorphonuclear leucocytes remained about the same, the lymphocytes diminished at first, then increased beyond the normal, after which they gradually dropped to normal proportions. The eosinophile polymorphonuclears varied from 1.4 per cent. to 5 per cent., and at the

1. Jordan: *Grangeb. d. Med. u. Chir.*, 1903, vol. xi.
2. Osler: *Am. Jour. Med. Sci.*, 1900, January; also *Edin. Med. Jour.*, 1899, p. 441.
3. Lössen: *Grangeb. der Med. u. Chir.*, xiii, 1904.
4. Banti: "*L'Anæmia Solenica*," Florence, 1882; also, *Ziegler's Beitr. z. path. Anat.*, vol. xxiv, 1898.
5. Solis-Cohen and Rosenberger, R. L.: *Trans. Coll. Phys., Philadelphia*, vol. xxvi.
6. Taylor: *Lumleian Lectures*, 1904.
7. Bessel-Hagen: *Archiv. f. klin. Chir.*, vol. lxii, p. 168.
8. Umber: *Ztschr. f. klin. Med.*, vol. xxv, 1904.
9. Kausch: *Jahresber. d. schles. Gesell. f. vaterl. Kult.*, 1902, p. 286.
10. Pribram: *Prager. med. Wochschr.*, 1902, No. 9.
11. Chiari: *Prager med. Wochschr.*, 1902, No. 24.
12. Mohr: *Berl. klin. Wochschr.*, 1903, No. 46.
13. Roger: *Presse Méd.*, 1904, No. 57.
14. Kast: *Wien. med. Wochschr.*, 1903.
15. Galvagni: *Clin. Med.*, vol. xviii, No. 17.

last count .66 per cent. The late eosinophilia noted in our case and usually observed after splenectomy is no more characteristic of splenic anemia than Banti's disease and is not necessarily always a postsplenectomy phenomenon.

v. Decatella and Hoffbauer¹⁶ report a case of splenic anemia with marked leucopenia and an eosinophilia of 4.3 per cent. Pribram¹⁰ notes in a case of Banti's disease in which splenectomy was not performed 3 per cent. of eosinophiles, and Lossen³ reports as high as 10 per cent. in a case before splenectomy.

As to the significance of these various blood changes one is mindful of the fact that in hypertrophy of the spleen from whatever cause a decrease in hemoglobin, in erythrocytes, and in many cases in the white corpuscles is very likely to follow. How this leucopenia is produced is difficult to explain from our present knowledge of the hematopoietic function of the spleen.

The explanation for the secondary anemia accompanying splenic hyperplasia rests as yet more or less on a hypothetical basis. Harris and Herzog¹⁷ advanced the explanation that the great increase in endothelium in the venous capillaries is associated with destruction of the erythrocytes, possibly by means of the production of a chemical substance. These histologic changes have been observed only in a few instances, so that they can not be regarded as typical of the diseased condition.

The favorable results following splenectomy in both splenic anemia and Banti's disease speak in favor of the spleen being in some way the cause of the poor blood condition seen in these diseases.

The lymphocytosis noted following splenectomy must be regarded as an attempt at compensation. In making a summary of all splenectomies recorded Stachelin¹⁸ found in spleen disease reports, but very few cases in which it did not appear either sooner or later.

Eosinophilia is usually noted sooner or later in human splenectomies. A high grade eosinophilia has been produced experimentally by Ehrlich and Lazarus¹⁹ in splenectomizing guinea-pigs.

If the eosinophiles are to be regarded as having their source in bone marrow, the scarcity of myelocytes and nucleated red cells rather points against any great compensatory activity on the part of the marrow in the disease in question.

In considering the blood findings of the two diseases, splenic anemia and Banti's disease, before and after splenectomy, one is led to the conclusion that, whatever the nature of the disease process or the causative influence, the blood-forming organs are not particularly concerned. The more likely points of attack are the vascular channels and tissues of the spleen and in time also those of the liver.

DISCUSSION.

DR. MAXIMILIAN HERZOG, Manila, P. I., said that for several years he had a chance to examine the blood of a patient in whom a splenectomy had been performed for splenic anemia. In this case the eosinophilia became very marked after the splenectomy, and persisted for years. Dr. Herzog does not know what finally became of the patient. A typical eosinophilia is not always produced in animals after splenectomy. Dr. Herzog said that during the last two or three years he has splenectomized the white rats of three successive generations. The object of this work was to produce certain

well-characterized blood changes and to find out whether or not such an acquired change could be inherited by the offspring. One of the most important questions in biology is whether or not acquired properties can be inherited. Since the blood changes in the splenectomized rats were not very constant and characteristic, nothing came of this work. Physicians, he said, are still in the dark as to Banti's disease. Dr. Herzog called attention to the fact that splenomegaly, with or without cirrhosis of the liver, is very common in the tropics, and he has seen many cases among his postmortem material encountered during the last two or three years in Manila. He referred, he said, only to cases in which there was neither a malarial nor any other well-defined basis explaining the condition of the spleen or liver. After ruling out such well-understood cases, there still remain many of splenomegaly for which no etiologic explanation can yet be offered. The etiology of Banti's disease remains as mysterious to-day as it has ever been.

VITAL POINTS IN THE TECHNIC OF SUPRAPUBIC ENUCLEATION OF THE PROSTATE FOR BENIGN ENLARGEMENT OF THAT GLAND.*

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It is generally conceded that, step by step, the operation of enucleation of the prostate from its capsule, whether performed suprapubically or perineally, has justly attained the recognized rank of a curative procedure for that urinary obstruction and destruction which is caused by benign enlargement of the gland.

It would add greatly to the "unification of the surgery of the world"—to use an expression of Howard A. Kelly—if a consensus of opinion

Fig. 1.—Finger entering prostatic urethra.

could be taken on three points which can not but be vital to the future ready acceptance of this operation by the patient as well as by the profession.

My own experience, which, I may state, is both large and varied and dates from the time when I was taught prostatectomy by McGill of Leeds, in 1890, forces me to the conclusion that our suprapubic technic for prostatic enucleation is faulty in three directions, and these form the three points, I venture to suggest, should be carefully discussed and pronounced on by the surgical section of this association. I submit that our present technic tends (1) to the destruction of the vesical orificial ring; (2) to the wholesale destruction of

16. v. Decatella and Hoffbauer: *Ztschr. f. klin. Med.*, vol. xxxix, 1900.

17. Harris and Herzog: *Deutsch. Ztschr. f. Chir.*, vol. lix, p. 567.

18. Stachelin: *Deutsch. Arch. f. klin. Med.*, 1903.

19. Ehrlich and Lazarus: *Nothnagel's "Speciella Path. u. Therap."* vol. viii.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.