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GENERAL STAFF MEETING
UNIVERSITY HOSPITALS
UNIVERSITY OF MINNESOTA

CONTENTS

PUBLICATION AIDED BY CITIZENS AID SOCIETY

I. ANNOUNCEMENTS

1. John Littig, former Interne University Hospitals, who left here in June 1931, writes from University of Michigan Hospital about his service in Internal Medicine. He has charge of one ward on Male Medicine at the present time, sees his Senior Staff three times weekly and his Junior Staff men daily. Reports a very good service and a profitable year to date. Wishes to be remembered to his friends at Minnesota and to invite them to come to see him when down his way. Like all loyal Minnesotans, the annual game between Michigan and Minnesota is always a bitter pill to swallow. His plans for next year are indefinite but feels that his present service has been invaluable.

2. November 19, 1931. Carcinoma of the esophagus and its treatment was considered today. Roentgenologist Rigler made a splendid demonstration of the various types of esophageal lesions including malignancy. Kenneth Phelps gave an abstract of the symposium on carcinoma of the esophagus held recently in St. Louis. He felt that he had little to add to what had already been said. Jackson favored early gastrostomy; Graham late gastrostomy because of the psychic effect on the patient. Early surgical removal is the only possible hope of cure. Few come early and nearly all present marked technical difficulties. Because of the insidious nature of the onset of this disease, gross obstruction is usually present when the patient is first seen. Dr. Phelps has has some difficulty in keeping a tube in place after passing it through the stricture. In his experience most tubes end up in the colon.

Because of the rather common appearance of swallowing difficulties in neurotic patients, all types of dysphagia no matter what the background should be investigated. A patient seen at this Hospital last year had difficulty in swallowing and had been called a neurotic for some time. Her own physician in attempting to prove to her that there was nothing organically wrong with her swallowing apparatus passed a stomach tube without difficulty. When he removed it, however, the tip was covered with blood and he immediately referred the patient back for another study. Prior to this time she had been very well investigated without finding the lesion.

Experience teaches that in breaking a passage way through the tumor mass, a certain amount of force must be used. It is surprising how few accidents result from this procedure. According to Dr. Rigler, esophageal carcinoma may mimic any type of gastrointestinal lesion, even peptic ulcers. Dr. Wangensteen commented on the recent developments in experimental surgery of the esophagus (dogs). Prior to a short time ago, even this type of surgery was unsuccessful. Perhaps the developments in this field will point the way to a change in our attitude toward the surgical treatment of carcinoma of the esophagus. In spite of the difference of opinion as to whether the lesions are local or extensive when first seen, many are probably not resectable. Carcinoma of the esophagus is rather an unhappy picture at the present time and everything should be done to bring maximum comfort to these patients. Official attendance 84.
November 26, 1931, Thanksgiving Day, No meeting.

3. December 3, 1931. The theme for discussion today was tumors of the jaw. We were fortunate in having with us Carl Waldron who gave a most interesting discussion. He now has a collection of some fourteen adamantinomas arranged in demonstration sets. The chief lesions to be considered in intrinsic jaw tumors are: 1. Root cysts; 2. Giant cell tumor; 3. Dentigerous cyst; 4. Adamantinoma. The first three are usually associated with malformed teeth and occur in younger patients. The latter is seen in older people very often without any association with a dental anomaly.

The marked preference for the left lower jaw and the probable association with irritation from third molars is striking. In the review of the literature, most authors agree that secondary treatment of incompletely treated cases is not very hopeful. In Dr. Waldron's experience, this has not been borne out. Many of his cases apparently doing

very well had incomplete treatment before he saw them. An adamantinoma may vary from a trifling tumor to an enormous cystic growth. They may be considered locally malignant as metastasis is very rare. Cystic tumors predominate. They may be seen in association with antral growths. A new note of conservatism has been sounded in apparently successful radiation treatment.

We have in the house at the present time a child who is blind and shows marked signs of increased intracranial pressure. She has a calcified tumor in the supra-sellar region with marked destruction of the clinoid processes. According to the present day conception of such growths, this might be either an adamantinoma or a Rathke's pouch tumor because the former is more common. A tentative clinical diagnosis of adamantinoma of the cranial-pharyngeal duct could be made. Endocrine changes are not marked. The prognosis is poor although the tumor has been present (blindness) for many years. In view of the results with radiation of jaw tumors, such treatment (pallaitive) might be indicated in these cases. The meeting was characterized by unusual interest on the part of the audience who felt that this was an opportunity to increase their knowledge of tumors of the jaw.
Official attendance 76.

II. CASE REPORT

ESSENTIAL THROMBOCYTOPENIC PURPURA.
CEREBRAL HEMORRHAGE. Path. Pearson.

The case is that of a white female, 19 years of age, admitted to the University Hospitals 8-17-31 and died 9-24-31 (38 days).

Four months ago.
5-1-31 - Patient had a severe bleeding from the left nostril lasting for about two hours.

Skin spots.
6-1-31 - Patient noticed a few spots on the skin thatdisappeared in a few days. These would come on the ankles and forehead.

Marked bleeding.
7-6-31 - Patient had a severe nosebleed, also bled from the rectum and passed bloody urine. She was taken to a hospital where her nose was packed and the bleeding stopped in about two hours.
7-27-31 - Patient had another similar bleeding attack.

No infection, or family bleeding.
8-9-31 - Had another similar attack of bleeding. Past history: No history of bleeding in the family. No history of infection prior to illness.

Hospital
8-17-31 - Admitted to the University Hospitals. Physical Examination reveals a well-developed and well-nourished, white female lying quietly in bed. Blood pressure is 96/62. There are numerous petechiae in the skin and mucous membrane of the mouth. The spleen is not palpable. Pulse and temperature are normal.
8-18-31 - Given Blaud's pills gr. xx, t.i.d. Dilute hydrochloric acid drams 1/2, t.i.d. Urine - faint trace of albumen and very occasional rbc's.

Laboratory
Blood - Hb. 45%, rbc's 2,690,000, wbc's 8,500, Pmn's 66%, L 30%, M 3%, and E 1%, marked anochromasia, moderate anisocytosis and poikilecytosis, slight polychromatophilia with basophilic stipling. Platelet count - 25,000. Fragility - hemolysis begins at .44, complete at .34. Bleeding time 2 minutes and clotting time 4 minutes. Blood shows retraction of the clot.

Thrombocytopenic purpura.
8-19-31 - calcium lactate drams 1/2, t.i.d. Bleeding time - 21 minutes from ear and 18 minutes from the finger; clotting time - 5 minutes. Platelet count - 20,000. The clot is retractile after 22 hours. Normal blood clot after 1-1/2 hours. A special blood study shows moderate signs of regeneration, only slight indication of toxic reaction. Platelets are markedly reduced. The picture looks like an essential thrombocytopenic purpura. Urine - trace of albumen.

Surgical consultation.
8-20-31 - Emesis of 75 cc. clear fluid. Blood - Hb. 45%, reticulocytes 5%. Surgical consultation - typical thrombocytic purpura. Suggest transfusion after transfer to Surgery prior to splenectomy.

8-23-31 - Blood - 43% Hb., 12% reticulocytes. Stool - pasty, black, no blood nor pus.

Theelin.

8-25-31 - Stools - benzidene +. Blood - Hb. 44%, reticulocytes 5%. Blood calcium - 12,804 mg. Basal metabolic rate - -25%. 200 units of Theelin shows no change in the bleeding time. Platelet count - 25,000. Pulse 100. Temperature normal.

8-28-31 - Thyroid extract gr. ii daily. Blood - Hb. 46%, reticulocytes 4.5%.

Transfusion.

8-29-31 - At 5 A.M. - began to hemorrhage from right nostril. The nose was packed and adrenalin inserted in the right nostril. Morphine sulphate gr. 1/4 times 2. 450 cc. of whole uncitrated blood was then given. No reaction.

Saline.

8-30-31 - Emesis of 25cc. of old blood. Hypodermoclysis of 1300 cc. of saline. Platelet count - 75,000. Pulse 100. Temperature 100.6.

Viosterol.

9-3-31 - Viosterol M xx, t.i.d. Blood - Hb. 56%, rbc's 2,960,000. Bleeding time 6 minutes and 50 seconds, clotting time 7-1/2 minutes. Urine - negative.

Liver.

9-8-31 - Stearn's liver capsules IV, t.i.d. Platelet count - 69,000. Bleeding time 7 minutes and 15 seconds. Blood - Hb. 60%, rbc's 3,270,000. Basal metatolic rate - -1%. Pulse 120. Temperature 99.

Transfusion.

9-11-31 - Patient is bleeding from the left nostril. Adrenalin packs are inserted. Emesis of 100 cc. of old blood. Transfused and returned from the operating room in good condition.

Whole Blood.

9-13-31 - Expectorates mucous and bright red blood. There is some bleeding from the left nostril. 10 cc. of whole blood given intramuscularly. The nose is packed. Bleeding time is now 46 minutes. Platelet count 125,000. Blood - Hb. 68%, rbc's 3,396,000. Clotting time 6-1/2 minutes.

Transfusion.

9-19-31 - Patient is given a transfusion. Platelet count - 70,000.

Fibrinogen.

9-21-31 - No bleeding. Platelet count - 15,530. Fibrinogen ampule i, t.i.d. Pulse is up to normal.

Intracranial lesion. Exitus.

9-24-31 - at 9:35 P.M. - patient became restless. Medical note - B.P. 140/80. Breathing is shallow. Athetoid movements. Pin-point pupils. The legs are flexed on the abdomen. Abdominal reflexes are gone. Knee jerks are gone. Bilateral Babinski's are present. 10 P.M. - legs are flaccid. Pupils dilated, do not react to light and accommodations. Respiration 18. Pulse 60 to 90. Blood pressure 160 systolic, 90 diastolic. Patient is becoming more cyanotic. Respirations are shallow and weaker. 11:30 P.M. - patient expired.

Autopsy.

The body is that of a well-developed and well-nourished, white female, 19 years of age, measuring 164 cm. in length, and weighing approximately 130#. Moderate rigor is present. Hypostasis is purplish and posterior. There is no edema, cyanosis, or jaundice. Each pupil measures 3 mm. in diameter and are regular. There are multiple, small patches of petechiae over the anterior portion of the chest and abdomen. There are multiple puncture wounds in both antecubital spaces. There is an incision 3 cm. long in the inner malleolus of the left foot. There is marked anemia of the conjunctiva noted.

The fat over the anterior abdominal wall is about 5.0 cm. in thickness. The peritoneum is smooth and glistening. No evidence of peritonitis. However, upon inspection, small petechial hemorrhages are found throughout the Peritoneal Cavity. There is about 10 cc. of blood in the pelvic cavity. The Appendix is subcecal and free.

The Pleural Cavities contain about 25 cc. of blood-tinged fluid (each). The Pericardial Sac contains a minimal amount of fluid.

The Heart weighs 250 grams. All of the valve edges are free and normal. The chambers are normal. The coronaries and Root of the Aorta show no sclerosis.

The Right Lung weighs 250 grams, Left 400 grams. There are small petechial hemorrhages starting out through both the visceral and parietal pleurae and the lower lobes of both lungs, especially the left showing some congestion. There is no evidence of any bronchopneumonia.

The Spleen weighs 180 grams. The capsule is grayish and smooth and of normal thickness. On section, the pulp is found to be quite firm and dark red. The trabeculae are very prominent.

The Liver weighs 1500 grams. On section a slight amount of cloudy swelling is shown. The Gall-Bladder and ducts are normal.

The Pancreas (100 grams) and Adrenals are normal.

Each Kidney weighs 125 grams. The capsules strip easily, revealing smooth surfaces. On cut section, the substance of the kidney is somewhat hemorrhagic. There is hemorrhage in both of the pelves of the kidney. Ureters are normal.

The Bladder is normal.

The uterus is normal in size and shows no evidence of disease. The tubes are normal. The ovaries are enlarged and cystic.

The organs of the Neck are not examined.

Head. The head is opened and inspected. The dura seems to be of normal thickness. There is no evidence of any hemorrhage in the pia-arachnoid, except in one small area about 2.5 cm. in diameter over the left central lobe. The brain is excised very carefully. The brain when inspected showed a hemorrhage whose origin is probably in the left ventricle. There is also some area of softening around this point. The brain is not cut open but sent to Dr. McKinley's office for further study.

Diagnoses:

1. Essential thrombocytopenic purpura.
2. Cerebral hemorrhage (intraventicular).
3. Encephalomalacia.
4. Hemorrhage into the pia-arachnoid.
5. Petechial hemorrhages of serous membranes.
6. Petechial hemorrhage into the skin.
7. Anemia (clinical).
8. Recent incision of left foot.
9. Multiple puncture wounds in both antecubital spaces.
10. Cloudy swelling of liver and kidneys.

Note: Case of essential purpura, dying from cerebral hemorrhage while being prepared for splenectomy. This is the second instance of this complication in our experience during the past two years.

III. CASE REPORT

THROMBOCYTOPENIC PURPURA (Successful splenectomy).

The case is that of a twelve year old girl, admitted to the University Hospitals 10-25-30 and discharged 12-14-30 (50 days).

First admission.

June 24, 1930 to July 29, 1930. Prior to that time she had purpuric spots in her skin. Was given calcium lactate and they disappeared, but apparently returned when treatment was stopped. She also bled from her gums and the bowel in December 1929.

Four weeks before her admission started to menstruate and has continued to bleed. Family history negative for bleeding. During the intermission, she has remained very well (except as noted) and started back to school. Stools have been dark colored most of the time. Although at one time she was considered to be "symptomatic purpura" it seemed fairly evident on readmission that she had the primary type of the disease.

Physical Examination.

Well-developed and well-nourished female. Profuse bleeding around right molar teeth and small hemorrhagic areas in the mucous membrane in this region. Spleen cannot be palpated. Purpuric spots on lateral surface of right leg, right popliteal space, left leg, and right forearm.

Laboratory.

Urine - albumen once, no red cells. Blood - hemoglobin 88%, wbc's 10,500, P 65%, L 35%. Platelet count 87,000. Bleeding time varied from 1' 30" to 20". It was 16" prior to operation. At one time the platelets were 30,000. Clotting time varied from 8 to 10 minutes.

Operation.

On November 8th, 1930 under spinal ...sthesia and ethylene, splenectomy was successfully performed. The temperature was elevated the second and third day but aside from this convalescence was uneventful. Before the operation the platelets were 2,000, the next day, 212,000. The fth postoperative day, clotting time s still 3 minutes. Platelets 68,000. e was discharged with a platelet count f 85,000, in excellent condition.

Note:

This patien had a milder more chronic course. Operation was done at a favorable time and s followed by cessation of all symptoms. n spite of the temporary rise of the platelets after splenectomy, They again fell to lower level without return of symptoms. (Not unusual).

IV. ABSTRACTS

PURPURA HEMORRHAGICA - Abstr. Pearson.

1. Definitions. Thrombocytopenic purpura can be divided into two main groups: symptomatic and essential. The first group includes all those cases in which insufficiency of platelets is just a symptom of a severe general condition, e.g. (a) thrombocytopenia following dyscrasia of the blood (leukemia, pernicious anemia, aplastic anemia and agranulocytosis); (b) thrombocytopenia following acute infections (general sepsis, subacute bacterial endocarditis, typhus fever, etc.); (c) thrombocytopenia following poisoning with organic chemicals, such as benzol, benzine or arsenic compounds, and (d) thrombocytopenia subsequent to destruction of bone marrow by granulation tissue [illegible] disease, neoplasm or hyperplastic proliferation of the reticulum [illegible] disease). Other factors in thrombocytopenic purpura [illegible] anaphylactic phenomena [illegible] lack of vitamins. The [illegible] of essential thrombocytopenic purpura is characterized by the [illegible] any other disease or known impairment which can be held responsible for the platelets. (Ref: Green-[illegible]). Purpura as a result of [illegible] platelets or thrombocytopenia may be (1) acute, Clinically, purpura hemorrhagica (thrombocytopenia?) is characterized by (1) marked diminution of number of platelets in circulating blood, (2) normal (or slightly delayed) clotting time, (3) prolonged bleeding, (4) failure of clot to retract, (5) positive tourniquet test. Family history is negative and it is not hereditary. Hemophilia occurs almost explicitly in males (but not exclusively). Thrombocytopenia is more common in females. In hemophilia, there is family history of bleeders and the condition is hereditary (females to males). In hemophilia, the bleeding time is prolonged and all the other factors mentioned are normal.

2. Historical.

1731 to 1735 Werthoff was the first to separate the purpuras from a large heterogeneous group of pathological conditions associated with hemorrhage.

1883, Hayem described blood platelet.

1883, Kraus reported a case of purpura hemorrhagica and called attention to decreased number of platelets.

1887 to 1889, Denys again made same observation and in addition noted that the clotting time was normal but that the clot did not retract. (Ref. De Sanctis and Allen).

3. Age - Sex. Thrombocytopenia is essentially a disease of early youth. It is much more common in females, (3 to 1) and usually has its origin before puberty. Hemorrhages may occur in any part of body and from mucous membranes. Petechiae and ecchymoses are present in all cases. Most common form of bleeding is from gums, nose, uterus, urinary tract, bowels, and brain. In females it usually begins (before the age of fifteen years) with epistaxis. At onset of menstruation, epistaxis gives way to menorrhagia and finally to tractable metrorrhagia. (Ref: Reuben - Claman). Koster states that the disease occurs most frequently before the third decade and more commonly in females. Of 90 cases reported by Whipple, 81% occurred before they had reached the 40th birthday and of these cases 69% occurred in females. (Ref. - Spence).

Operation.

On November 28th, 1930 under spinal anesthesia and ethylene, splenectomy was successfully performed. The temperature was elevated the second and third day but aside from this convalescence was uneventful. Before the operation the platelets were 72,000, the next day, 212,000. The fifth postoperative day, clotting time was still 3 minutes. Platelets 68,000. She was discharged with a platelet count of 85,000, in excellent condition.

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This patient had a milder more chronic course. Operation was done at a favorable time and was followed by cessation of all symptoms. In spite of the temporary rise of the platelets after splenectomy, They again fell to lower level without return of symptoms. (Not unusual).

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4. Theories: Operation for splenectomy for purpura hemorrhagica was performed for the first time by Kaznelson (1916). He argued that the hemorrhages were the result of constant reduction in the number of blood platelets and this reduction was brought about by the destructive action of a diseased spleen. He suggested the name "thrombocytolytic purpura". Frank advises splenectomy but on different grounds, namely that the reduction of platelets was due to inhibitory action of the spleen on the bone marrow and for this reason called the disease "essential thrombocytopenia". It was suggested at one time that the infection should be seriously considered as a factor. It is known definitely that inadequate drainage of the streptococcus focus as in infection of an antrum or sinus will result in great diminution of the thrombocytes with the appearance of petechiae and purpuric bleeding. The blood of these patients clots but does not retract. If platelets from a normal person are added to the whole blood of thrombocytopenic patients it causes the blood from the purpuric patients to clot promptly and retract. However, if washed normal platelets are heated, there is no retraction of the blood clot of the purpuric patients. Duke studying this under the ultra-microscope first noted that there is an agglutination of the platelets with probable expression or freeing of thromboplastin from some of the destroyed platelets. The release of thromboplastin sets in motion the mechanism of blood clotting. The thromboplastin activates prothombin which has been held in check by antithrombin. This reduces fibrinogen to fibrin. The fibrils of the fibrin can actually be seen detaching themselves from the platelets, and retraction occurs. The platelets of the thrombocytopenic patients have been shown to have their normal quota of thromboplastic substances (even when washed). Therefore, it appears that the protracted bleeding is not due to a disarranged clotting mechanism but merely to the decreased number of platelets. (Ref. - Spence).

5. Morbid Anatomy of Spleen.

Follicles composed entirely of secondary follicles with large, bright reticulos cells filled with plasma and pale, oval nuclei. These cells occupy the center of the secondary follicles and are surrounded by more or less strongly developed zone of lymphocytes. In the central and marginal zones, there are well-developed follicular arteries surrounding the follicles indicating that the follicle is at its highest degree of activity. Reticular cells of pulp are swollen and hypertrophic with thick curved nuclei often showing myeloid changes. (Note: Thie marked follicular hyperplasia was a prominent feature in one of our recent cases). No fibrosis or fat pigment is seen. No thrombocytic phagocytosis was seen. Washburn found enlarged malphigian corpuscles with hyperplastic germinal center with increased thickness of intersinusoidal reticular tissue and fibrosis. Schminche found myeloid metaplasia. The author believes that there is increased activity of splenic parenchyma without any perceptible injury to different cells (within physiological limits). She believes that it is a reacting organism in conjunction with others but not the primary cause of essential thrombocytopenia. (Ref. - Berquist).

6. The relation of platelets to bleeding time. It is usually stated that there is correlation between the number of platelets and the bleeding time. However, Spence found figures like this: 60,000 - 1 minute, 12,000 - 3 minutes, 31,200 - 3 minutes, 12,000 - 3 minutes, 20,000 - 2 minutes, 120,000 - 2 minutes, 109,000 - 3 minutes, 20,000 - 1/2 minute, 88,000 - 1/2 minute, 20,000 normal, 80,000 - 3 minutes, 100,000 - 1-1/2 minutes. It is noted that no absolute correlation occurs. (Observations made after the spleen has been removed). As a general rule counts below 100,000 are associated with bleeding.

7. Results of splenoctomy: Immediately after operation there is cessation of hemorrhages usually with no recurrence. As a general rule, the platelets rise gradually to high level but six days after operation are normal.

Spence studied 101 published cases. He found good results with no recurrence of hemorrhages in 69, 6 showed considerable improvement ; 21 died after operation, in 5 hemorrhages continued but with slight improvement. Of 75 cases

in which the results were good, 16 were not followed up for any considerable period of time. Of the 21 fatal cases, 17 died as result of severe bleeding, 4 died of causes other than purpura. It is most important to divide them into the acute and chronic types, the chronic being much more common than the acute. Example: 80 chronic, 12 acute, 9 in which the duration was stated, of the acute cases 10 died; of the chronic only 8, 1 being due to an accident and 3 to causes other than purpura. In 5 of the chronic cases, the results were poor. In 61 cases, there was a great increase in platelets, the count rising to normal in 25 and above normal in 36, In 35 of the 61 counts were not made for more than 3 months after splenectomy. In 11 of these, the count had fallen from above normal to normal by the end of 3 months. 26 cases were followed longer. In 10 the platelet count remained normal over a considerable period, but in 16 the platelets fell gradually so that there was again a thrombocytopneia. The erythrocytes increase as well as the leucocytes with a normal proportion of cells followed in most cases by a gradual fall of the whites.

Rankin reports 40 cases and states that the earlier the operation is performed (in the course of the disease) the better the results. Ages - 0 - 16, 12; 16-30, 18; 30-50. 9; 50-60, 1. 13 were males and 27 females. Results good 36, fair 3, poor 1. Is operation contraindicated in acute stage, that is when patient is having active hemorrhage? It is thought best to give 2 or 3 transfusions and see if the patient improves. However, if bleeding continues, one is justified in doing a splenectomy. If the patient improves, wait until the risk of operation is lessened.

End results reported by Whipple, Spence, and Washburn are as follows: 16 cured, 14 not improved, or dead, in chronic group. Hoglund records 33 cases taken from foreign sources. In 20 cases in which the time was given inyyears, the shortest was 1 year and the longest 18 years. The average duration before operation was 5+ years. 5 cases had symptoms since childhood or birth, 2 for several years, and 2 for 4 days, and 1 for 3 days. 23 females and 10 males. The youngest operated upon was 5-1/2 months and the oldest 64 years. Average age for group was 23 years. 5 died and the cause of death was as follows: bilateral chronic tuberculosis, heart disease, subphrenic abscess, 2 of collapse. After splenectomy 27 were followed.

Case 1. 3 years after splenectomy a platelet count of 173,000. The count 3-1/2 months before operation was 200.

Case 2. which had a platelet count before operation of 66,000, two months afterward was 577,000.

Case 3, was examined 4-1/2 years after splenectomy, the platelet count was 19,000. The original count before operation was 0. Five days after operation the platelet count was 648,000.

Case 4, was examined two months after splenectomy and showed a platelet count of 577,000. The original count before operation was 38,000.

Case 5, was examined 8 months after splenectomy and showed a platelet count of 145,000. The original count before operation being 2,500.

Case 6, was examined 11 days after operation and showed a count of 350,000, being 8,000 before operation.

Case 7, remained symptom free. Was examined 3 weeks after operation and at that time had platelet count of 208,000. The platelet count before operation was 30,000. The history showed a platelet count of 176,000 3 months after operation. Just before operation showed no platelets.

Case 8, was examined 7 months after operation and showed platelet count of 306,000, the count before the operation was not determined because of a blood transfusion. 1 day before operation showed 92,000 platelets.

Case 9, was examined after splenectomy and showed 20,000 platelets, before operation 6,400.

Case 10,

showed (5 months after operation) 50,000 platelets, 12 days before had 27,500.

Case 11, was examined 2 months after operation, platelets 600,000, before operation 40,500.

Case 12, had 148,000 platelets one month after splenectomy, 2 days before operation 19,000.

Case 13, showed 4 months after operation 100,000 platelets.

Case 15, showed 2 days after operation 350,000.

Others: There were six cases that showed slight bleeding from the nose and mucous membrane at the beginning but later were symptom free. There were 2 cases in the beginning that were entirely symptom free and later showed slight bleeding. 1 case a few months after the splenectomy showed no improvement.

8. Acute vs. Chronic.

Splenectomy is advised in chronic type of disease. Everyone who writes warns against operating on acute cases. The acute fulminating type usually gives no history of former hemorrhages, petechiae, or purpuric spots. These cases according to Reuben and Clamon suddenly begin to ooze and bleed from every mucous membrane, the whole skin becomes covered with pin-point petechiae. Of the 8 cases in the literature which were operated in the acute state, 7 died, as follows: Female, 15, female 16, male 17, female 20, male 29, female 42, and female 44. The only one who recovered was a boy of 12. He adds an acute case (3-1/2 years) in which splenectomy saved the child's life and is now free from all symptoms 18 months after operation. They believe that every means should be used to stop hemorrhage and build up the patient before splenectomy; but when all measures fail, and the bleeding continues, transfuse, remove the spleen regardless of whether the case be acute or chronic. Marsh states that previous to 1925, 10 cases of acute hemorrhagic purpura were reported in the literature; splenectomy was performed in each. 1 patient recovered, 1 was reported the day of operation so the outcome is unknown; eight died. All references to the contra-indication of splenectomy have been made from these cases, the majority of which are in the German literature. Since 1925 four cases of acute hemorrhagic purpura in which splenectomy has been successful have been reported. Because of this he became interested in determining, if possible, why operations previous to 1925 had failed, as these failures had resulted in a general pessimistic attitude toward splenectomy in acute cases. Six of the eight patients who died were all operated on when the blood count was low. In 5 the hemoglobin was below 45%, and in 1 it was 74%. The transfusions were not used in any of these patients before or after operation. In any other type of surgery an operation would not be considered until the blood had improved with the use of one or more transfusions. In contra-distinction to the 8 deaths are 4 recent reports of patients who lived. At the time of operation the hemoglobin in these patients was 46, 50, 68 and 70%, and the erythcytes were 2,700,000; 3,300,000; 3,400,000 and 3,900,000 respectively. In all of the patients transfusions were used immediately preceding the operation. If splenectomy is attempted in the presence of a very low blood count and without preliminary transfusions, a high mortality rate may be expected. Author (fifth case) of acute hemorrhagic purpura in which the patient recovered after splenectomy.

9. Other Treatments.

Holboll reports a female, 52 years of age, with subcutaneous bleeding. Platelet count 39,000, bleeding time 3 minutes, coagulation time 4 minutes. A diagnosis of thrombocytopenic purpura was made. The treatment consisted of liver extract and glucose 600 grams daily The patient was admitted 11-27-29 and discharged 2-20-30, (treatment for six weeks). The hemoglobin on admission was 64% and on discharge 102%. The red blood count 3,930,000 and 5,110,000. Platelet count 39,000 to 287,000. The coagulation time was 4 minutes on admission and 4 minutes on discharge. The bleeding time was 30 minutes on admission and 2-1/2 minutes on discharge. Clappertons reports a case of girl, 23 years of age, with essential thrombopenic purpura. On admission no platelets were found. She was put on liver treatment and in about four months the blood was back to normal and the patient was symptom free.

10. Cerebral manifestations.

Warfield and Longcope state this manifestation is unusual though it is known to occur especially in cases of idiopathic purpura. Pratt collected 194 cases of idiopathic purpura and found cerebral hemorrhagica affecting the central nervous system and its mem-

branes. In one there was a pachymeningitis with fresh hemorrhages into the subdural space. In the second instance, an extensive fresh subdural hemorrhage, third case subpial. In five other fatal cases, there were principally numerous fresh hemorrhages into the brain substance itself. Symptoms and signs vary according to site and size of hemorrhage. In some, headache, coma, or epileptiform convulsions occurred. In others there were more direct localizing signs. The commonest among these was hemiplegia. Osler describes three cases of hemorrhage into the brain as manifestation of purpura hemorrhagica. As a rule, the hemorrhages are multiple and it is not possible to discover the bleeding vessels.

11. Summary.

1. Thrombocytopenic purpura is symptomatic (many causes) and essential.

2. The disease has been known to be associated with platelet disturbance since 1883 (Kraus).

3. Clinical picture is definite. (1) Marked diminution of platelets in circulating blood. (2) Prolonged bleeding time. (3) Normal or slightly delayed clotting time. (4) Failure of clot to retract. (5) Positive tourniquet test.

4. Family history is negative and the disease is not hereditary.

5. Disease is essentially one of youth and of females.

6. Petechiae and ecchymoses are present in all cases (skin). Most common site of bleeding from mucous membranes is gums, nose, uterus, urinary tract, bowel and brain.

7. Epistaxis and disturbance of menstruation in young females is significant of possible purpura.

8. There are two theories as to the relationship between the spleen and the disease. (1) Destruction of platelets. (2) Inhibition of the spleen on the bone marrow.

9. The platelets of thrombocytopenic patients have the normal quota of thromboplastic substance even when washed. Therefore it appears that the protracted bleeding is not due to a disarranged clotting mechanism but merely to a decreased number of platelets.

10. Chief changes in the spleen are hypertrophy, follicular hyperplasia, myeloid metaplasia, hyperplasia of reticulum, and sometimes a marked polymorphonuclear infiltration (fibrosis+)

11. There is apparently no definite relationship between the number of platelets and the bleeding time, although clinically hemorrhages usually occur with counts below 50 to 75,000 (except after splenectomy).

12. Splenectomy in the chronic form of the disease was successful in 86% of cases in a collected series. (All cases followed for some time after operation). The platelets show an unorthodox behavior as to number but bleeding ceases.

13. Only a few successful splenectomies have been reported in the acute form. The number is apparently growing because of better preoperative preparation (transfusions).

14. Liver extract has apparently been tried in a limited number of cases with success.

15. Gross hemorrhage in the brain occurs in about 2% of the cases. Symptoms and signs vary according to location of the hemorrhage. Hemiplegia is perhaps the commonest.

Conclusion: Not all cases of chronic essential thrombocytopenic purpura are subjected to splenectomy (as in hemolytic jaundice). Because of natural remissions without the use of "specific medical treatment" caution must be observed in interpreting such results, e.g., liver. There are two forms of chronic purpura (continuous and intermittent). The results after splenectomy are remarkable and apparently permanent. Splenectomy in acute purpura is a formidable procedure in poorly prepared patients but may be life saving. Delay is dangerous, if the operation is contemplated.