LEUCOCYTOSIS IN GYNECOLOGY.

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Most gynecological diseases lack the marked acuteness of many of the surgical emergencies that come under the care of the general surgeon. Inflammations of the pelvic organs usually run a slow course compared with the rapidity of a perforative appendicitis, a ruptured tubal pregnancy frequently goes for some days before operative interference without great harm to the patient, an ovarian cyst with a twisted pedicle completely obstructing the blood supply may remain quiescent for some days without the urgent symptoms of a strangulated hernia. Naturally in the slow cases the resisting forces of the organism are brought into action less energetically and the marked changes of the more rapid diseases in the blood are not found. If, however, the changes which do occur are carefully studied in conjunction with the other symptoms, valuable assistance will often be obtained. In this paper, special attention will be given to the white blood cells though in many cases the number of red blood cells and the percentage of hemoglobin are recorded. In all cases tabulated, the diagnosis was confirmed by operation by

the writer. The period of time covered by the series was the past three years. All operative cases of this period are not included, as in many cases no blood examination was made, but the cases that are tabulated are not selected cases and are representative of their types.

The blood counts were made usually between 9 o'clock and 12 o'clock in the morning by members of the hospital house staff, men who are not expert pathologists but have been carefully trained, have done a large amount of work and undoubtedly are accurate in their findings. That the counts were made in the routine work of the hospital and not for material for this paper, will account for the irregularity in the number and time of the examinations in different cases. The temperature and pulse recorded represent the highest of the day.

TABLE I.

ECTOPIC PREGNANCY.

Case No.	Date	Temp.	Pulse	Leucocytes	Red B. C.	H B.	Diag. and Oper.
1	Sept. 9	100	80	11,000	.....	....	L. unruptured. Dermoid Cyst R. ovary.
	Sept. 11	.....	...	.....	.....	....	Resection L. tube. Removal R. ovary.
2	Mch. 19	98.8	80	7,000	4,300,000	75%	L. unruptured.
	Mch. 25	.....	...	.....	.....	....	Resection L. tube.
3	Nov. 27	98.8	72	10,400	5,000,000	....	L. unruptnred.
	Nov. 29	.....	...	.....	.....	....	L. salpingo-oophorectomy.
4	Nov. 4	101.2	152	25,600	.....	....	L. recent rupture.
	Nov. 4	.....	..	.....	.....	....	L. salpingo-oophorectomy.
5	July 15	99.8	88	7,750	3,500,000	75%	L. recent rupture.
	July 17	.....	...	.....	.....	....	L. salpingo-oophorectomy.
	July 19	103	140	16,500	0,704,000	30%	.....
	July 22	.....	...	.....	.....	....	Died, pneumonia.
6	July 19	100.4	100	12,000	.....	40%	R. recent rupture.
	July 20	.....	...	.....	.....	....	R. salpingo-oophorectomy.
	July 21	101.6	128	9,000	2,400,000	....	.....
7	Sept. 20	99.4	124	11,000	.....	32%	Pelvic hematocele.
	Sept. 20	.....	...	.....	.....	....	Vaginal incision.
	Sept. 28	100	120	7,000	3,160,000	35%	.....
	Oct. 10	98.8	92	5,000	4,256,000	50%	.....

8	Jan.	2	102	120	9,700	.....	90%	Pelvic hematocele.
	Jan.	19	.....	...	.....	.....	....	Vaginal incision.
9	June	28	99.6	88	5,000	4,000,000	70%	Pelvic hematocele.
	July	2	.....	...	.....	.....	....	Vaginal incision.
10	Feb.	6	99.2	78	6,000	5,168,000	70%	Pelvic hematocele.
	Feb.	7	.....	...	.....	.....	....	Vaginal incision.
	Feb.	10	100.4	84	6,000	.....	65%	.....
11	Feb.	24	100.2	84	6,000	4,000,000	70%	R. Tubal abortion.
	Feb.	25	.....	...	.....	.....	....	R. salpingectomy.
	Feb.	26	100	96	8,500	.....	....	.....
12	Jan.	17	99.4	96	7,500	4,100,000	75%	Pelvic hematocele.
	Jan.	18	.....	...	.....	.....	....	Vaginal incision.
	Jan.	19	102.2	132	14,000	.....	....	.....
13	June	6	99.8	86	7,500	.....	....	R. tubal abortion.
	June	10	.. ..	...	.....	.....	....	Resection R. tube.
14	Sept.	5	99.6	88	10,400	.....	70%	L. tubal abortion.
	Sept.	8	98 2	80	19,000	.....	65%	.. ..
	Sept.	11	99	76	14,500	.....	....	.. ..
	Sept.	17	99	68	8,000	4,000,000	65%	.....
	Sept.	18	.....	...	.....	.....	....	L. Salpingo-oophorectomy.
15	July	27	99	76	9,500	4,500.000	65%	L. tubal abortion.
	July	28	.....	...	.....	.....	....	L. salpingo-oophorectomy.
16	Mch.	24	103	128	21,000	.....	....	Pelvic hematocele.
	Mch.	4	.. ..	...	.....	.....	....	Vaginal incision.
	Mch.	31	103	124	15,000	.....	....	.....
17	Aug.	6	100.8	104	10,000	2,544,000	43%	Old abdominal pelvic hematocele.
	Aug.	9	100.6	104	9,800	.....	53%	Complete abdominal hysterectomy
18	July	10	100.4	104	18,700	3,112.000	62%	R. tubal abortion; L. pyosalpinx.
	July	12	100 8	120	15,000	....	....	.....
	July	12	.....	...	.....	.....	....	L. salpingo-oophorectomy.
	July	14	104.4	130	16,000	.....	....	.....
	Aug.	4	98.8	100	6,700	3,900,000	52%	.....
19	Feb.	16	100	100	13,000	2,900,000	....	L. tubal abortion.
	Feb.	18	101	100	11,000	.....	....	.....
	Feb.	18	.....	...	.....	.....	....	L. salpingo-oophorectomy.
20	Aug.	29	100.2	...	22,400	3,232,000	30%	Sixth-month fetus in abdominal cavity.
	Aug	29	.....	...	.....	.....	....	R. salpingo-oophorectomy.

The cases of ectopic pregnancy for consideration can conveniently be divided into four classes.

a. Unruptured.
b. Recently ruptured and bleeding.
c. Hematocele without infection.
d. Hematocele with infection.

Cases 1, 2, and 3 were unruptured, and no one of the three was diagnosed as ectopic pregnancy previous to the operation. Case 1 was operated on for ovarian cyst and cases 2 and 3 were thought to be inflammatory though the possibility of ectopic pregnancy was considered. There is no reason to expect an increase in the white cells in cases of unruptured ectopic pregnancy without complications, and the slight increase in cases 1 and 3 is not significant. Cases 4, 5, and 6 were cases which had recently ruptured, and of these case 4, with a count of 25,600, made a few hours after rupture, is of special interest. At the time of operation the patient was in an extreme condition, pulse of 152, abdomen distended and found when opened to be filled with blood, that is, a case with a recent large hemorrhage. This is in accord with observations of patients who have lost a large quantity of blood at surgical operations. Following a surgical operation with severe hemorrhage Lyon quoted by Ewing, found after one hour 41,625, after five days 14,300 leucocytes. And also with an observation of Pankow who records one case of recently ruptured tubal pregnancy with a white blood count of 31,480. Case 5 had no leucocytosis at the first examination two days before operation. While under observation in the hospital, the tube ruptured and two days later there was a leucocytosis of 16,500. This increase was due probably in part to the post-operative leucocytosis and in part to blood lost between the time of rupture and that of the operation. The decrease in the number of red cells and in the hemoglobin is too great to be ascribed to the operation only.

In cases 7 to 15 inclusive the rupture had occurred some days previous to the examination with the formation of a hematocele which was shut off from the general peritoneal cavity by adhesions. In none of these cases at the operation were there signs of a recent rupture nor of any active inflammation. With the exception of Case 7, in which the hematocele extended nearly to the umbilicus, and in which the leucocytes amounted to 11,000 and the hemoglobin to only 32 per cent. none of these cases had had any great hemorrhage as shown by little or no change in pulse, red cells and hemoglobin and none of them showed any special leucocytosis at the initial examination. Case 14 with an

increase in leucocytes from 10,400 to 19,000 and a decrease in hemoglobin from 70 per cent. to 65 per cent. in an interval of three days without a change in pulse or temperature, suggests that the case was bleeding at the time. Cases 16 to 20, inclusive, comprise those cases which at operation gave evidence of recent inflammation. Case 17 was an extensive case with broken down blood clot filling pelvis and lower part of abdomen, and was considered at first to be an exudate due to an abortion. Case 18 was a right tubal abortion associated with a left pyosalpinx. The leucocytosis of 18,700 was undoubtedly due in part to the pyosalpinx. Case 20 was an obscure case that had refused operative intervention until her general condition was bad. At the operation, a sixth month fetus was removed from the abdominal cavity. This patient died. The leucocytosis of 22,400 was due probably to the inflammatory condition about the fetal sac.

Conclusions.—A tubal pregnancy in which the tube is unruptured and is not aborting causes little or no leucocytosis. With a tubal rupture or abortion there is an initial high leucocytosis depending on the amount and rapidity of the hemorrhage, and this leucocytosis diminishes as the bleeding ceases. After the blood has been encapsulated there is but slight leucocytosis unless it becomes infected or is complicated by other inflammatory conditions

TABLE II.

Pelvic Abscess.

Case No.	Date	Temp.	Pulse	Leucocytes	Red B. C.	H.B.	Diag. and Oper.
1	Nov. 9	99.8	76	7,200	.....	80%	Pelvic abscess.
	Nov. 14	99.6	80	8,000	.....	70%	.....
	Nov. 22	98.6	68	6,000	.....	75%	.....
	Nov. 22	.....	...	.....	.....	....	Vaginal incision.
2	Aug. 17	99.8	88	8,000	.....	60%	Pelvic abscess.
	Aug. 21	.....	...	.....	.....	....	Vaginal incision.
	Aug. 22	100.6	112	19,400	.....	70%	.....
	Aug. 25	99.6	90	13,000	.....	60%	.....
	Sept. 1	98.8	80	12,000	.....	60%	.....
3	July 15	99.6	72	10,000	.....	....	Pelvic abscess.
	July 17	.....	...	.....	.....	....	Vaginal incision.
4	July 25	102.6	116	10,000	.....	65%	Pelvic abscess.
	July 27	103.8	104	8,000	.....	65%	.....
	July 28	.....	...	.....	.....	....	Vaginal incision.

5	Oct.	25	99.6	72	12,000	.....	65%	Pelvic abscess.
	Oct.	25	.....	..	.....	.....	....	Vaginal incision.
	Nov.	7	98.6	78	6,000	.....	65%	.....
6	June	23	99.4	92	12,750	.....	55%	Pelvic abscess.
	July	18	.....	...	.....	.....	....	Vaginal incision.
7	Oct	1	100.2	104	15,000	.....	65%	Pelvic abscess.
	Oct.	11	99.6	90	12,000	.....	....	.....
	Oct.	16	.....	...	.....	.....	....	Vaginal incision.
8	Aug.	8	101.6	120	15,600	.....	....	Pelvic abscess.
	Aug.	19	.....	...	.....	.....	....	Vaginal incision.
9	Sept.	23	102	128	16,000	.....	55%	Pelvic abscess.
	Sept.	29	.....	...	.....	.....	....	Vaginal incision.
	Oct.	3	102	128	22,000	.....	....	.....
	Oct.	6	103.2	128	21,500	.....	....	.....
	Oct.	10	100.4	104	13,000	.....	....	.....
10	Aug.	10	101.6	120	16,700	.....	72%	Pelvic abscess.
	Aug.	19	102	108	18,000	.....	60%	.....
	Aug.	21	101.6	108	18,000	.....	....	.....
	Aug.	22	.....	...	.....	.....	....	Vaginal incision.
	Aug.	25	101.4	116	12,400	4,836,000	70%	.....
11	Dec.	13	99.8	100	17,700	1,476,000	....	Pelvic abscess.
	Dec.	21	101.2	112	11,700	2,536,000	50%	.....
	Jan.	2	101.8	108	15,600	.....	....	.....
	Jan.	4	.....	...	.....	.....	....	Vaginal incision.
12	July	5	103	112	18,700	.....	....	Pelvic abscess.
	July	7	.....	...	.....	.....	....	Vaginal incision.
13	Sept.	14	103.6	112	19,000	.....	60%	Pelvic abscess.
	Sept.	17	102.4	112	15,000	.....	52%	.....
	Sept.	18	.....	...	.....	.....	....	Vaginal incision.
	Sept.	19	99.6	112	18,000	.....	63%	.....
	Sept.	22	100	100	17,000	.....	65%	.....
	Sept.	25	102.4	120	14,400	.....	75%	.....
14	Oct.	3	102.2	104	24,120	3,476,000	75%	Pelvic abscess.
	Oct.	8	101.4	96	22,630	.....	....	.....
	Oct.	12	103	104	21,900	.....	....	.....
	Oct.	15	.....	...	.....	.....	....	Vaginal incision.
	Oct.	19	101.8	104	22,600	.....	....	.....
	Oct.	23	100 4	96	15,700	.....	....	.....
	Oct.	27	100.4	96	16,600	.....	....	.....
	Oct.	30	100	102	16,600	.....	....	.....
15	Nov.	15	102	116	27,400	4,800,000	90%	Pelvic abscess.
	Nov.	16	.....	...	.....	.....	....	Vaginal drainage.
	Nov.	18	100.4	112	30,000	3,900,000	....	.....
	Nov.	29	99	88	11,500	.....	....	.....
	Dec.	10	104.4	1 4	17,200	.....	....	.....
	Dec.	14	101	104	6,500	.....	....	.....
16	Aug.	20	102.6	120	22,000	.....	75%	Pelvic abscess.
	Aug.	22	.....	...	.....	.....	....	Vaginal incision.
	Sept.	14	98.6	88	11,000	.....	....	.....
17	Sept.	15	102.4	112	22,000	.....	60%	Pelvic abscess.

	Sept. 16	.....	...	.....	.....	....	Vaginal incision.
	Sept. 19	102	120	18,000	.....	60%	.....
	Sept. 22	102	120	13,000	.....	....	.....
	Sept. 30	101.8	124	10,000	.....	....	.....
	Sept. 17	102.8	136	18,000	.....	....	Pelvic abscess.
	Sept. 19	.....	...	.....	.....	....	Second vaginal incision.
18	May 7	100	120	34,750	.....	50%	Pelvic abscess, vaginal incision.
	May 13	101.4	108	29,500	.. ..	30%	.....
	May 18	102.2	116	23,750	.....	....	.....
	May 25	104.8	128	24,000	.....	35%	.....
	June 9	102.6	112	9,000	.....	40%	.....
19	Mch. 29	100.2	104	38,000	.....	70%	Pelvic abscess.
	Apr. 2	101	116	6,500	.....	65%	.....
	Apr. 4	.....	...	.....	.....		Vaginal incision.

The term "pelvic abscess" as used in Table II is used to include any abscess in the pelvis, the exact anatomical location of which could not be determined. The operation in all the cases here tabulated was an incision posterior to the cervix into the abscess cavity and drainage with gauze or rubber tube.

Cases 1, 3 and 4 were probably cases of pyosalpinx in which the acute symptoms had largely subsided and were treated by drainage without removal because the abscess was in close proximity to the vaginal vault and the patient's age made it undesirable to remove the appendage. These cases show practically no leucocytosis. Cases 5 to 19 represent acute inflammatory conditions in which the appendages were bound down by recent exudate. These cases if operated upon through the abdomen constitute the most difficult and dangerous gynecological operations and a vaginal incision with drainage has been in the hands of the writer a valuable and safe procedure as a preparation for a subsequent abdominal operation and in many cases as a curative remedy. In ten of these fifteen cases the leucocytosis was between 15,000 and 25,000, in two below 15,000 and in two over 30,000. These cases undoubtedly represent the early acute stage of the more severe types of inflammatory disease of the appendages. In the majority of these cases left without operation, the exudate would ultimately be absorbed, leaving a chronic abscess in one or both tubes and ovaries. The differential diagnosis between a pelvic abscess and a retrouterine hematocele is sometimes extremely difficult. It is in this class of cases that the greatest benefit is derived from a knowledge of the number of leucocytes present. The cases of hematocele without

infection recorded in Table I have only a small or no increase in the white cells, while the leucocytosis in the cases of pelvic abscess is marked.

TABLE III.

Inflammation of Appendages.

Case No.	Date	Temp.	Pulse	Leucocytes	Red B. C.	H. B.	Diag. and Oper.
1	Nov. 21	99.4	80	6,000	.....	65%	Double pyosalpinx.
	Nov. 22	.....	...	.....	.....	....	Supravaginal hysterectomy.
2	July 8	99.4	72	7,000	.....	....	R. pyosalpinx.
	July 12	.....	...	.....	.....	....	Supravaginal hysterectomy.
3	Aug. 10	98.8	64	7,200	.....	70%	R. pyosalpinx.
	Aug. 12	.....	...	.....	.....	....	R. salpingo-oophorectomy.
4	Nov. 8	101	104	8,000	.....	60%	L. pyosalpinx.
	Nov. 12	100	108	13,000	.....	70%	.....
	Nov. 22	100.2	96	12,700	.....	65%	L. Salpingo-oophorectomy.
5	May 11	99.4	72	8,000	.....	60%	L. tubo-ovarian abscess.
	May 16	.....	...	.....	.. ..	....	L. salpingo-oophorectomy.
	May 31	104	112	7,000	.....	60%	.. ..
6	Dec. 24	99 2	88	8,400	.....	75%	Double pyosalpinx.
	Dec. 29	99.4	104	7,700	3,688,000	70%	.....
	Jan. 3	.....	...	.....	.....	....	Supravaginal hysectomy.
7	Mar. 26	102	92	9,000	.....	60%	Double pyosalpinx.
	Mar. 28	.....	..	... ..	.....	....	Complete hysterectomy.
8	Jan. 26	99.4	92	9,000	.....	....	R. tubo-ovarian abscess.
	Jan. 28	.....	...	.....	.....	....	R. salpingo-oophorectomy.
9	Aug. 31	99.8	92	9,400	3,968,000	43%	Double ovarian abscess.
	Sept. 2	.....	...	.....	.....	....	Supravaginal hysterectomy.
10	Oct. 4	99.6	92	9,400	.....	65%	Double pyosalpinx. Supravaginal hysterectomy.
	Oct. 10	99	96	9,200	.....	65%	.. ..
11	Mar. 20	99	84	9,500	4,400,000	53%	Double pyosalpinx.

	Mar.	21	.....	...	.....	.....	....	Complete hysterectomy.
12	Jan.	23	99.4	96	10,000	.....	70%	Double pyosalpinx.
	Jan.	29	.....	...	.....	.....	....	R. salpingo-oophorectomy.
13	Dec.	6	98.8	106	10,000	.....	40%	R. Pyosalpinx. R. salpingo-oophorectomy.
	Dec.	16	104.4	128	26,000	.. ..	25%	.....
	Jan.	2	99	104	6,000	.....	35%	.....
14	Mar.	1	100.4	104	10,500	.....	....	Double pyosalpinx.
	Mar.	4	.....	...	.....	.....	....	Complete hysterectomy.
15	July	7	101.8	100	11,000	.....	....	R. pyosalpinx.
	July	11	100.4	100	13,500	4,312,000	75%	.....
	July	14	99.4	92	10,000	.. ..	....	.....
	July	15	.....	...	.....	.....	....	Supravaginal hysterectomy.
	July	28	100.2	104	5,000	.....	....	.....
16	Oct.	18	102.8	102	11,000	.....	....	Double pyosalpinx.
	Oct.	20	103.4	116	13,000	.....	....	.....
	Oct.	21	.....	...	.....	.....	....	Complete hysterectomy.
17	Jan.	9	98.8	92	11,500	.....	....	Double pyosalpinx.
	Jan.	21	.....	...	.....	. .....	....	Supravaginal hysterectomy.
18	Jan.	26	99	84	11,500	.....	60%	Double pyosalpinx.
	Jan.	27	.....	...	.....	.....	....	Supravaginal hysterectomy.
19	Nov.	14	101.2	92	12,700	2,972,000	65%	Double pyosalpinx.
	Nov.	15	.....	...	.....	.....	....	Complete hysterectomy.
20	Nov.	2	101.2	100	13,000	.....	....	L. tubo-ovarian abscess.
	Nov.	6	101	88	14,800	.....	....	L. Salpingo-oophorectomy.
21	Nov.	4	99.6	88	13,000	.....	75%	Double pyosalpinx.
	Nov.	6	.....	...	.....	.. ..	....	Complete hysterectomy.
22	Oct.	23	100	92	13,200	.....	65%	Double pyosalpinx.
	Oct.	30	.....	...	.....	.....	....	Complete hysterecomy.
23	Sept.	19	100.4	96	13,700	.....	55%	R. pyosalpinx.
	Sept.	20	.....	...	.....	.....	....	R. salpingo-oophorectomy.
24	Nov.	7	98.6	80	15,000	.....	80%	Double pyosalpinx.
	Nov.	15	98 6	74	18,700	.....	80%	Complete hysterectomy.
25	May	23	100	116	16,000	.....	80%	Double pyosalpinx.

	June 6	.....	...	.....	.....	....	Complete hysterectomy.
	June 21	99.4	96	8,000	.....	....	.....
26	Oct. 8	100	110	16,000	5,000,000	95%	L. tubo-ovarian abscess.
	Oct. 8	.. ..	...	.....	.....	....	L. salpingo-oophorectomy.
27	April 16	105	140	16,500	.....	60%	L. ovarian abscess. R. pyosalpinx.
		....	...	.....	.....	....	Complete hysterectomy; died.
28	Sept. 19	102.4	112	16,600	.....	60%	Double pyosalpinx
	Sept 24	102.8	108	11,000	.....	55%	....
	Sept. 29	.....	..	.....	.....	....	Complete hysterectomy.
	Oct. 6	101.8	120	9,200	.....	55%	.....
	Oct. 10	101.8	140	1,400	.....	60%	Died.
29	Aug. 8	98.8	84	18,000	.....	80%	.. ..
	Aug. 10	99.6	96	17,000	.....	80%	L. pyosalpinx.
	Aug. 10	.....	...	.....	.....	....	L. salpingo-oophorectomy.
30	July 10	100.4	104	18,700	3,112,000	62%	L. pyosalpinx.
	July 12	99.8	102	15,000	.....	....	L. salpingo-oophorectomy.
	July 14	104.4	130	16,000	.....	75%	.....
	Aug. 4	98.8	100	6,700	3,900,000	52%	. .....
31	July 29	103	108	25,000	.....	60%	L. ovarian abscess.
	July 30	100.2	92	15,000	3,544,000	62%	.....
	Aug. 1	100.2	92	18,000	.....	60%	L. salpingo-oophorectomy.
32	Feb. 2	103.6	128	37,500	.....	....	Purulent salpingitis; general peritonitis; complete hysterectomy; died.
33	Mar. 19	100.6	104	41,000	.....	....	Double purulent salpingitis; complete hysterectomy.
	Mar. 20	103.2	152	44,000	.....	....	.....
	Mar. 21	105 6	152	.....	.....	....	.....
	Mar. 22	102.4	136	27,000	.....	....	.. ..
	Mar. 23	101 4	142	21,000	.....	....	.....
	Mar. 24	100.8	040	25,000	.....	....	.. ..
	Mar. 25	101.4	128	22,000	.....	....	.....
	Mar. 26	101.4	128	18,000	.....	....	.....
	Mar. 27	100	112	13,500	.....	....	.....
	Mar. 28	101	108	11,000	.....	....	.....
	Mar. 92	100.2	112	8,500	.....	....	. .....

Table III includes cases of inflammatory disease of one or both appendages, the type which necessitated the removal of the diseased organs. This table naturally follows Table II as these cases, with the exception of cases 31, 32 and 33, represent the subacute and chronic stages of the same class of cases that are recorded in Table II in the acute stage. Of the cases 1 to 30, thirteen had less than 10,000 leucocytes, eleven between 10,000 and 15,000, six between 15,000 and 20,000. Case 31, with a leucocytosis of 25,000, was an acute case with recent exudate about an old ovarian abscess, which I attempted to drain through the vagina, but as this was not successful, the abdomen was opened and the diseased appendage removed. The case was of the acute type of those in Table II. Cases 32 and 33 were cases of acute purulent salpingitis with spreading peritonitis, without adhesions, following recent abortions. These cases were of the most acute type, resembling cases of acute appendicitis. The leucocytosis was very high, 37,500 in case 32 and 41,000 in case 33 at the time of the operation. Case 32 died. Case 33 is recorded at some length as the case illustrates the value of the leucocyte count as an aid to prognosis. This case was in a serious condition, cosiderable tympanites, vomiting and a pulse varying between 140 and 150 for five days subsequent to the operation. By the third day the leucocytes had decreased to 27,000; that is in this case the improvement in the leucocytosis was forty-eight hours before the apparent improvement in the patient's general condition.

Conclusions from Tables II and III. During the acute stage of a severe inflammation of the appendages associated with more or less exudate and localized peritonitis there is a leucocytosis varying usually from 15,000 to 25,000, occasionally more than 25,000. As the acute symptoms subside the leucocytosis diminishes. In many chronic cases free from exacerbation there is practically no leucocytosis at all. If during the acute stage the peritonitis becomes general, the leucocytosis may be very high.

TABLE IV.

Fibromyomata Uteri.

Case No.	Date	Temp.	Pulse	Leucocytes	Red B. C.	H. B.	Diag. and Oper.
1	Dec. 6	99.4	48	6,000	1,400,000	15%	Fibromyomata uteri.

	Dec. 13	100.8	104	7,000	1,400,000	15%	Supravaginal hysterectomy.
	Dec. 20	101	100	12,700	1,584,000	25%	.. ..
2	Mch. 13	99	72	8,750	4,328,000	....	Fibromyomata uteri.
	Mch. 14	.....	...	.....	.....	....	Supravaginal hysterectomy.
3	Nov. 18	99	74	10,800	.....	....	Fibromyomata uteri.
	Nov. 19	....	..	.....	.....	....	Supravaginal hysterectomy (infected wound).
	Dec. 1	102.4	120	19,800	.....	....	.....
	Dec. 7	100.2	100	10,000	.....	....	.....
4	Nov. 25	99	100	5,600	3,330,000	55%	Fibromyomata uteri.
	Nov. 26	.. ..	...	.....	.....	....	Complete hysterectomy.
5	Mch. 7	98.8	64	7,000	3,900,000	50%	Fibromyomata uteri.
	Mch. 7	.....	...	.....	.....	....	Supravaginal hysectomy.
6	Mch. 29	98.8	80	9,000	.. ..	....	Fibromyomata uteri.
	Apr. 8	98.8	90	15,000	.....	....	Supravaginal hysterectomy.
7	Sept 7	99.4	88	7,000	.....	....	Fibromyomata uteri; double pyosalpinx.
	Sept. 9	.....	...	.....	.....	....	Supravaginal hysterectomy.
	Sept. 26	99.2	80	5,800	.....	....	.....
8	May 27	101.8	100	7,750	.....	45%	Fibromyomata uteri; double pyosalpinx.
	June 6	.....	...	.....	.....	....	Supravaginal hysterectomy.
9	Nov. 14	99.2	84	9,000	.....	65%	Double pyosalpinx.
	Nov. 20	.....	...	.....	.....	....	Complete hysterectomy.
10	Mch. 12	99.8	84	11,500	.....	....	Fibromyomata uteri; double pyosalpinx.
	Mch. 21	.....	...	.....	.....	....	Complete hysterectomy.
11	July 9	102.2	118	14,750	.....	90%	Fibromyomata uteri.
	July 15	98.8	80	8,000	.....	90%	L. tubo-ovarian abscess.
	Aug. 7	98.8	96	9,000	.....	75%	.....

	Aug. 7	.....	..	.....	.....	....	Myomectomy.
	Aug. 04	101	120	16,000	.....	70%	L. salpingo-oophorectomy.
	Aug. 20	100.4	112	15,500	.....	80%	.....
12	Nov. 28	99	100	15,000	.....	70%	Fibromyomata uteri; double pyosalpinx.
	Nov. 29	.....	...	.....	.....	....	Complete hysterectomy.
13	Nov. 1	98.8	104	17,500	.. ..	65%	Fibromyomata uteri; R. pyosalpinx.
	Nov. 1	.. ..	...	. ....	.. ..	....	Myomectomy, R. salpingo-oophorectomy.
	Nov. 3	100	104	24,000	.....	65%	.. ..
	Nov. 14	101.4	106	11,200	.....	70%	.....
14	Nov. 1	98 8	104	17,500	.....	65%	Fibromyomata uteri, R. pyosalpinx. Myomectomy, R. salpingo-oophorectomy.
	Nov. 3	100	104	24,000	.....	65%	.....
	Nov. 14	101.4	106	10,200	.....	70%	.....

Table IV comprises those cases in which fibroid tumors of the uterus constituted the chief pathological lesion. Cases 1 to 5 were cases without degenerative changes and without disease in the appendages. There was no significant leucocytosis in any of these cases previous to operation. Case 3 showed marked leucocytosis on the thirteenth day due to wound infection. Case 6 had a fibroid about two inches in diameter which had recently become gangrenous from interference with the blood supply. The leucocytes increased with this change from 9,000 to 15,000 without material change in pulse or temperature. Cases 7 to 14 comprise those cases in which the fibroid tumor was complicated with tubal disease. The leucocytosis was doubtless due to the complication.

Conclusions from Table IV. Fibromyomata that have not degenerated show no leucocytosis unless complicated by disease of other organs. A degenerated fibroid may cause a leucocytosis.

TABLE V.

Ovarian Cysts.

Case No.	Date	Temp.	Pulse	Leucocytes	Red B. C.	H. B	Diag. and Oper.
1	Sept. 16	99	76	7,000	.....	80%	L. ovarian cyst.

	Sept. 18	.....	...	.....	.....	....	L. salpingo-oopho-rectomy.
2	Oct. 3	98.8	100	8,500	4,000,000	85%	Double ovarian cysts.
	Oct. 3	.....	...	.....	.....	....	Supravaginal hys-terectomy
	Oct. 9	100.8	108	10,000	.....	....	.....
3	Feb. 28	99.6	92	8,500	.....	....	R. ovarian cyst.
	Feb. 28	.....	...	.....	.....	....	R. salpingo-oopho-rectomy.
4	Jan. 17	98.6	92	9,400	3,688,000	65%	R. ovarian cyst.
	Jan. 17	.....	...	.....	.....	....	R. salpingo-oopho-rectomy.
5	July 16	98.8	76	8,000	.....	95%	Intraligamentous cyst.
	July 16	.....	...	.....	.. ..	....	Drained
6	July 29	101.8	96	10,000	.....	65%	L. ovarian cyst rup-tured.
	July 31	.....	...	.....	.....	....	L. salpingo-oopho-rectomy.
7	Sept. 14	101.4	108	9,000	.....	....	L. ovarian cyst, suppurating.
	Sept. 16	.....	...	.....	.....	....	Drained.
	Sept. 26	103.6	108	16,000	.....	....	.....
8	Oct. 27	102.4	98	10,200	.....	....	L. ovarian cyst, suppurating
	Oct. 31	102.4	100	14,000	.....	....	Fibromyomata uteri.
	Nov. 7	.....	...	.....	.....	....	Complete hysterec-tomy.
9	Feb. 19	102.4	104	17,000	.....	....	R. ovarian cyst, suppurating.
	Feb. 21	.....	...	.....	.....	....	R. salpingo-oopho-rectomy.
10	Feb. 12	102.6	112	17,000	.....	....	R. ovarian cyst, suppurating.
	Feb. 19	102.8	112	17,000	.....	....	.....
	Feb. 21	.....	...	.....	.. ..	....	R. salpingo-oopho-rectomy.
10	Feb. 10	102	120	26,000	.....	....	L. ovarian cyst, suppurating.
	Feb. 18	.....	...	.....	.....	....	Supravaginal hys-terectomy.
12	Feb. 26	100.2	116	18,800	.....	75%	L. ovarian cyst, twisted pedicle.
	Feb. 28	.....	...	.....	.....	....	L. salpingo-oophorectomy.
13	Mch. 10	99	96	9,000	.....	....	Malignant papil-loma of ovaries.
	Mch 11	.....	...	.....	.....	....	Exploratory lapa-rotomy.

Table V includes cases of ovarian cysts. Cases 1 to 5 were uncomplicated and showed no leucocytosis. Case 6 was a small cyst that had ruptured, but had caused practically no leucocytosis. Cases 7 to 12 were cases of suppurating ovarian cysts, leucocyte counts varying from 9,000 to 26,000. Case No. 13 was an ovarian cyst with a twisted pedicle and a leucocytosis of 18,800. Case 13 was an inoperable malignant papilloma involving the pelvic organs and had a leucocytosis of 9,000.

Conclusions from Table V. Ovarian cysts without complications do not cause a leucocytosis. If the cyst becomes infected or if the pedicle is twisted, interfering with its blood supply, there may be a leucocytosis up to 26,000.

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