

are in a position to profit from the reported cases, both in our treatment and in our prognosis.

## LITERATURE.

- Sudsuki. Ueber Divertikel am S. Rnmannn, Langenbeck's Arch., 1900, p. 708.  
 Hansemann. Ueber die Entstehung falscher Darmdivertikel, Virch. Arch., 1896, Bd. cxliv.  
 Fischer. False Diverticula of the Intestines. Journal of Experimental Medicine, 1900.  
 Klebs. Path. Anatomie, 1869, p. 271.  
 Hanau. Falsche Darmdivertikel, Virch. Arch., 1896, Bd. cxiv.  
 Edel. Ueber Erwerbene Darmdivertikel, Virch. Arch., 1894, Bd. cxxxviii.  
 Waldvogel. Fistel zwischen Flexura sigmoidea u. Blase, etc., Deutsche med. Woch., 1902, p. 32.  
 Chlumsky. Ueber verschiedene Methoden d. Darmreinigung, Beiträge z. klin. Chirurgie, 1899, Bd. xxv.  
 Rotter. Ueber Entzündliche Stricturen d. Colon, etc., Langenb. Arch., 1900, Bd. lxi.  
 Graser. Die Falsche Darmdivertikel, Langenbeck's Archiv, 1899, Bd. lix.  
 Graser. Ueber multiple falsche Darmdivertikel in der Flexura sigmoidea, Münchener med. Wochenschrift, May 30, 1899.  
 Mertens. Falsche Divertikel d. Flexura sigmoidea u. d. Processus vermiformis, Mittheilungen u. d. Grenzgebiet d. Med. u. Chir., Bd. ix.  
 Brehm. Ueber die Mesenterialschrumpfung in Ihre Beziehung z. Volvulus der Flexura sigmoidea, Langenbeck's Arch., 1903, Bd. lxx.  
 Phillipowicz. Mittheilungen n. inneren Darmverschluss, etc., ibid.  
 Mikulicz. Handb. d. prakt. Chir., 1900.  
 Koch. Ueber einfach entzündliche Stricturen d. Dickdarms, Langenbeck's Arch., 1903, Bd. lxx.  
 Fabris. Sui diverticoli acquisiti dell' intestino crasso, ref. Centbl. f. Chir., 1902, p. 1065.  
 Loomis. Peritonitis Due to False Diverticula, etc., New York Medical Record, 1870, vol. iv.  
 S. Jones. Transactions of the London Pathological Society, 1858.  
 Georgi. Ueber die Erwerbene Darmdivertikel u. seine praktische Bedeutung, Deutsche Zeitschrift f. Chirurgie, 1903, Bd. lxxvii.  
 Hepper. Operativ gebellter Fall von Blasen-Dickdarmfistel, Beiträge z. klin. Chirurgie, 1903, Bd. xxxviii.

## THE COMPLICATIONS OF AMEBIC AND SPECIFIC DYSENTERY, AS OBSERVED AT AUTOPSY.<sup>1</sup>

AN ANALYSIS OF ONE HUNDRED AND TWENTY CASES.

By CHARLES F. CRAIG, M.D.,

FIRST LEUT. AND ASST. SURGEON, U. S. ARMY, PATHOLOGIST AND BACTERIOLOGIST TO THE  
U. S. ARMY GENERAL HOSPITAL, PRESIDENT OF SAN FRANCISCO, CALIFORNIA.

IN the study of post-mortems on patients dying from dysentery at the General Hospital, I have been impressed with the frequent occurrence of grave complications in this disease, and have paid special attention to the pathological conditions present in the various organs. These conditions have been so constant and so important that it has seemed to me that they should be considered more at length than they are now in most of the text-books upon medicine. In looking up the subject of the complications of dysentery, in the most recent works, including even those of the larger

<sup>1</sup> With permission of the Surgeon-General of the United States Army. Read at the February, 1904, meeting of the San Francisco County Medical Society.

systems, I have been surprised at the relatively scant attention which this subject has received. For instance, in Davidsohn's excellent article upon dysentery in the second volume of Allhutt's *System of Medicine*, no mention whatever is made of the complications attending the disease. In La Fleur's article upon amœbic dysentery in the same volume, the complications attending it are dismissed in a very few lines, the only ones receiving much attention being abscess of the liver and intestinal perforation. This lack of extensive consideration of the complications of this disease is found in almost all of the more exhaustive works upon medicine. To the author this is surprising, for the reason that in a majority of cases occurring at the General Hospital, death has resulted rather from some complication than from the disease itself. While it is possible, in the class of cases cited, that many of the complications may have been due to campaigning in tropical countries with the incident hardships and lack of hygienic living, yet many of them are so constant that it is impossible not to believe that they are due to the disease, rather than to other factors.

It will be noticed that I have divided dysentery into two forms, amœbic and specific. This division has been made because the clinical and pathological conditions present are so diverse as, in my mind, to clearly separate them. Under the term "amœbic dysentery" is included the dysentery caused by the infection of the intestinal tract with *amœbæ coli*. Under the term "specific dysentery" I include the chronic form of the acute epidemic dysentery due to the bacillus of Shiga. This specific form of dysentery is differentiated from the amœbic form by the absence of amœbæ in the feces, by the occurrence, in a majority of cases, of agglutination of a pure culture of the Shiga bacillus by the blood serum of the patient suffering from the disease, and by the isolation of this bacillus, in pure culture, from the feces or from the intestinal ulcerations.

In a previous communication<sup>1</sup> I have described in detail the pathology of the chronic specific form of dysentery as observed in cases dying from this disease, and have been able, in several cases, to separate from the intestinal ulcerations the Shiga bacillus in pure culture. Although the differentiation of this form of dysentery by means of the agglutination test is not, I believe, entirely reliable, still I may say that in my experience this test has proven of much value. I have made a large number of tests with the Shiga bacillus in cases both of amœbic and specific dysentery, and have been able, in a majority of cases, to separate the two by this method. However, we do not have to depend upon this test in order to distinguish the two varieties, as the finding of the amœbæ in the

<sup>1</sup> The Pathology of Chronic Specific Dysentery of Tropical Origin, *American Medicine*, October 11, 1902.

feces decides at once whether or no we are dealing with amœbic dysentery.

When, however, the cases come to the autopsy table, the pathology of the two forms of dysentery are so different that there can be no mistake made in deciding with which we have to deal. It is not my intention here to give a description of the pathology of the various forms of dysentery, but simply to say that the pathological conditions present in the intestines in amœbic dysentery are so entirely distinct from those present in the specific form that a glance at the intestine suffices to distinguish them.

In considering the complications of these two forms of dysentery, I have selected for analysis 120 cases, 60 of the amœbic form and 60 of the chronic specific form. I have taken an equal number of cases of both varieties for the sake of comparison. I wish to state that the 60 cases of amœbic dysentery comprise nearly all the deaths we have had from that variety, and it is an interesting fact that the chronic specific form was very much more numerous at this hospital during the early days of the Philippine insurrection than it has ever been since. This agrees very well with the fact that the acute epidemic dysentery (or specific dysentery), as studied by Flexner and Strong, was very prevalent in the Philippines during the early days of the insurrection, but has since nearly disappeared, as I am informed by medical officers who have recently returned from the Islands. That this is true is proven by the fact that almost all of the cases of dysentery now received at the General Hospital are cases of the amœbic variety, whereas during 1899 and 1900 the vast majority of the cases received were of the chronic specific form.

#### *Complications Observed in the Nervous System.*

The cerebrum, in nearly every case in which it was examined, showed an increase in the amount of cerebrospinal fluid. This increase was often excessive, the brain being œdematous. Upon section of the brain, the lateral ventricles were invariably found filled with fluid, oftentimes slightly cloudy and the choroid plexus was invariably congested. A peculiar condition noted in all the amœbic cases was the intense congestion of the bloodvessels of the cerebrum. This congestion was very marked in all cases examined, and in about 50 per cent. of the cases minute capillary hemorrhages had occurred, which were scattered irregularly over the surface of the cerebrum; in the cases of chronic specific dysentery, on the other hand, the surface of the brain appeared anœmic, and this was especially true of the cut surface. In 3 cases of amœbic dysentery, and in 2 of the gangrenous stage of the chronic specific form, small areas of softening were noticed in the frontal lobes near the median fissure.

*Complications Observed in the Respiratory System.*

The most common conditions found complicating dysentery in the lungs were emphysema and bronchopneumonia. Of the 120 cases, 62 showed an emphysematous condition of the lungs, of which 42 occurred in the chronic specific form, the remainder in the amœbic. This condition is probably due, in greater part, to the long-sustained recumbent position of the patient and to the poor circulation which is generally present in these cases.

Bronchopneumonia is the most important lung complication, occurring in 14 cases, 12 of which were of the chronic specific form, and 2 of the amœbic. Perhaps a better name to designate this form of pneumonia is hypostatic, as it is probably due to maintaining the recumbent position for a long period of time, but as the pathological conditions are identical with those found in bronchopneumonia, I have preferred to retain that name. This complication was invariably fatal.

Lobar pneumonia occurred in 9 cases, 7 in the chronic specific form, and 2 in the amœbic. In all the cases it was the cause of death.

Empyema occurred in 11 cases, 10 of them being in the amœbic form of dysentery, and 1 in the chronic specific form. Of the 10 cases occurring in amœbic dysentery, 8 were due to perforation of a liver abscess into the pleural cavity.

A very common condition found at autopsy in both forms of dysentery is a chronic adhesive pleurisy, which occurred in 26 of the cases—19 of the specific and 7 of the amœbic form; in all of these cases the adhesions binding the lungs to the chest walls were very firm and of long duration.

Chronic bronchitis occurred in 16 cases—in 10 of the specific and in 6 of the amœbic form. Acute bronchitis occurred in 2 cases of amœbic dysentery. Acute pleurisy occurred in 8 cases, 6 of them being of the chronic specific form and 2 of the amœbic. Infarct of the lung occurred in 1 case of the chronic specific variety. Pulmonary tuberculosis complicated both forms of dysentery, 10 cases showing this complication; 6 of them of the amœbic variety, and 4 of the chronic specific form. In 6 of the cases death was due to this complication. Abscess of the lung was found in 4 cases; in 2 of the cases the abscesses were very numerous, being metastatic in character, and occurred in the chronic specific form of the disease. In 1 of these cases metastatic abscesses of the kidney were also found. The remaining 2 cases were due to amœbic infection of the lung, in 1 case the abscess being due to the perforation into the lung tissue of an amœbic abscess of the liver, and in the other to primary infection of the lung by amœbæ, a rather rare condition. In nearly every case a chronic venous congestion of the lungs was observed, but I have considered this of sufficient importance to record in but 59 cases. This congestion was, of

course, due to the recumbent position of the patient for a considerable period of time, and in many instances led to the production of a bronchopneumonia. I have only considered the condition as one of bronchopneumonia when the characteristic pathological lesions were present upon microscopic examination of sections of the lung, and I may say here that in all the cases recorded careful microscopic examinations were made of all the viscera, besides the examination of the organs macroscopically.

From a consideration, then, of the complications occurring in the respiratory system in dysentery, it will be seen that the most dangerous are the varieties of pneumonia. It will also be noted that the chronic specific variety of the disease is more often accompanied by serious complications than is the amœbic form. This is especially true of the occurrence of pneumonia, and is, no doubt, due to the fact that in the chronic specific variety the patient is more often compelled to keep to his bed for a longer period of time than when he is suffering from amœbic infection.

#### *Complications Observed in the Circulatory System.*

Edema of the pericardium occurred in 30 cases—in 18 of the chronic specific form, and in 12 of the amœbic form. This condition I have found to be one of the most characteristic complications observed in the fatal cases, and, as a rule, the pericardial cavity was found nearly filled with a clear, straw-colored fluid, although in a few cases small shreds of fibrin were observed. Both layers of the pericardium appeared normal so far as could be judged. Acute pericarditis occurred in 6 cases—in 4 of the chronic specific variety, and in 2 of the amœbic. In both instances found occurring in amœbic infection, the condition was due to the perforation of an amœbic abscess of the liver into the pericardial cavity. In all the cases of pericarditis the effusion was purulent in character and the pericardial cavity was distended by it. Valvular disease of the heart was present in 1 case suffering from the amœbic form of the disease. In this case there was valvular disease of both aortic and mitral valves. Arteriosclerosis was observed in 12 cases—8 suffering from the chronic specific form of dysentery, and 4 from the amœbic form. It is impossible in these cases to say how much alcohol had to do with the sclerosis, although it is reasonable to suppose that in most cases it had some etiological influence. When we take into consideration, however, the fibrosis which occurs in dysentery, especially in the liver, spleen, and kidney, it is impossible not to believe that the arteriosclerosis may be partially due to this general hypertrophy of connective tissue.

An important condition found microscopically in the heart muscle, especially in the chronic specific form of dysentery, is a

brown atrophy of the muscle fibre accompanied by partial fragmentation. This condition, the nature of which is still a disputed point, can be observed in almost every case if careful sections are made from different portions of the heart muscle, and as it occurs so frequently in dysentery, it is, I believe, due to pathological changes in the muscle fibre. This atrophy results naturally in lessened tonicity of the heart muscle, and, therefore, in lessened circulation, thus favoring the chronic venous congestion of the organs, which is so common in both varieties of the disease.

#### *Complications Observed in the Genito-urinary System.*

*Kidneys.* Some pathological condition of the kidneys was observed in almost every case of dysentery which has come to autopsy in this hospital. Thus, of the 120 cases analyzed in this paper, 101 showed some form of nephritis. It must be remembered that I have not diagnosed nephritis in these cases alone from a macroscopic examination of the organs, but also from a careful microscopic examination. There is no complication occurring in dysentery which is so common and, I believe, so important from a practical standpoint as is the occurrence of nephritis. It has been stated by some authorities that nephritis occurs but rarely in dysentery. I cannot understand how such a statement can be made, unless the cases which we receive from the Philippines are exceptional in some way, and this I do not believe. It seems to me that the statement can only be made by those who have had very little experience with the disease. Of the thousands of cases of dysentery which have passed through the General Hospital at San Francisco, I am prepared to state that at least 60 per cent. showed at some time or other evidences of inflammation of the kidney. The urine of at least this proportion showed, at some time or other, albumin and casts, and while the condition in a vast majority of cases seemed to clear up, we must admit that during a certain period of time some form of nephritis was present. This very large percentage is well shown in the fatal cases occurring at the General Hospital, in which 101 presented well-marked macroscopic and microscopic evidences of nephritis in one of its forms. The 101 cases were divided, as regards the type of nephritis, as follows:

Acute parenchymatous nephritis . . . . .	36
Subacute parenchymatous nephritis . . . . .	45
Chronic interstitial nephritis . . . . .	20

As regards the occurrence of these various forms in the two varieties of the disease, they were divided as follows:

Chronic specific form: Acute parenchymatous nephritis . . . . .	19
Subacute parenchymatous nephritis . . . . .	23
Chronic interstitial nephritis . . . . .	6-48
Amœbic form: Acute parenchymatous nephritis . . . . .	17
Subacute parenchymatous nephritis . . . . .	22
Chronic interstitial nephritis . . . . .	14-53

It will be observed that a greater number of cases occurred in the amœbic variety than in the chronic specific. This is an exception to the general rule that complications of other organs, except abscess of the liver, are more frequent in the chronic specific variety of the disease than in the amœbic. This large percentage of cases of dysentery showing marked kidney lesions would seem to indicate that the kidneys are especially susceptible to the poisons which are elaborated during the process of the dysenteric infection. As to the nature of these poisons, we know absolutely nothing; but so far as a careful examination could detect, there was nothing peculiar noticed about the microscopic appearance of the sections of the kidneys, nor could there be detected any accumulation of micro-organisms, nor any evidence of any special form of cellular degeneration. It is interesting to note that chronic interstitial nephritis occurred in 20 cases, because in all these cases the patients were young men in whom such a condition would not be expected. Of course, the question of alcoholism has to be considered in these cases, but I do not believe it had very much to do with the production of the disease, and think rather that the condition was one of overgrowth of connective tissue stimulated by some poisonous material, elaborated during the progress of the disease. The occurrence of so many cases of nephritis complicating the dysenteric process, indicates how important an examination of the urine is, since the non-discovery of this complication will invariably lead to a much less favorable prognosis as regards the course of the dysentery, as treatment will not be directed toward the kidneys.

It is impossible for me to say how many of these cases died from the effects of the nephritis, but I believe a considerable proportion did so, and in many of them the dysenteric lesions were so nearly healed that we were forced to look for the cause of death in some other organ, and I believe the kidney was, in all these cases, the organ at fault. Certainly 101 cases of nephritis occurring in 120 fatal cases of dysentery, which were not selected to show this complication, is very significant, and it seems to me of great practical importance.

Infarct of the kidney was observed in 1 case of amœbic dysentery. Abscess of the kidney was observed in 2 cases; in 1 the abscess being due to a perforation of an amœbic abscess of the liver into the kidney, and in the other it was due to metastatic abscesses, which were found also in the spleen and lungs. Urinary calculi were observed in 1 case of amœbic dysentery. Pyelonephritis was observed in 2 cases; 1 of the amœbic form, and the other of the chronic specific form.

#### *Complications Observed in the Glandular System.*

*Liver.* The most common complication observed in the liver was fatty degeneration, which was present in 42 cases, of which

22 were suffering from chronic specific dysentery and 20 from amoebic. In most of the cases microscopic examination showed the degeneration to be very extensive, whole lobules of the liver tissue being replaced by fat.

The next most frequent complication was chronic venous congestion, which was present in 36 cases, 20 of the chronic specific form and 16 of the amoebic. Microscopically this condition was often found to be very marked, the capillaries being engorged with blood, and in many instances these had ruptured, forming hemorrhagic areas within the organ.

Cirrhosis of the liver was observed in 10 cases, 6 of the chronic specific form and 4 of the amoebic. In all, the condition was one of common interlobular cirrhosis of comparatively slight extent. In those cases which did not present evidence of cirrhosis macroscopically, the microscope revealed what was evidently the earliest stage of the process, as evidenced by a slight increase in the interlobular connective tissue and more or less infiltration of the portal spaces by leukocytes and newly formed connective-tissue cells.

*Abscess of the Liver.* Undoubtedly the most important complication of dysentery, that is, of the amoebic form, is abscess of the liver. This condition was observed in 24 cases which came to autopsy, of which 22 were suffering from amoebic dysentery and 2 from the chronic specific form. The abscesses occurring in the chronic specific form were metastatic in character, the liver being thickly crowded with minute foci of supuration.

The frequency of the occurrence of amoebic abscess of the liver in dysentery seems to vary greatly with different observers, as is well shown in the following table. The total number of cases of dysentery observed at autopsy or collected from autopsy records (with the exception of Councilman and La Fleur and Futcher, who give all cases observed) by the different investigators is given, followed by the percentage of those presenting abscess of the liver. All the cases given in the table as observed by myself were amoebic in character, the *amœba coli* being demonstrated in the feces.

Observers.	No. of cases observed.	Percentage.
Kartulis . . . . .	Over 500	60
Zaucarol . . . . .	444	59
Edwards and Waterman . . . . .	699	72.1
Councilman and La Fleur . . . . .	1429	21
Craig . . . . .	74	33.7
Futcher . . . . .	119	22.6
Smith . . . . .	45	54.4

As will be seen from the above table, the percentage of cases of dysentery showing abscess of the liver at autopsy, as observed by myself, has been very small compared with that observed by others. I can hardly tell how to explain this difference unless most of the cases of amoebic abscess are discovered in the Philippines,



and either end fatally there or are operated upon before reaching this country, whereas the vast majority of cases of dysentery not presenting this complication are returned to this country for convalescence.

As regards the location of the abscesses, it may be stated that they occur most frequently in the right lobe, especially in the posterior and upper portion of that lobe. The following table, showing the location of the abscesses observed in cases coming to autopsy here, illustrates this point very clearly.

Number of case.	Abscesses.			
	Single.	Multiple.	Number.	Location.
1	.. ..	Yes	6	Right lobe 5, left lobe 1
2	.. ..	.. ..	8	" " 8, " " 0
3	.. ..	.. ..	4	" " 8, " " 1
4	.. ..	.. ..	13	" " 8, " " 5
5	.. ..	.. ..	8	" " 8, " " 0
6	.. ..	Yes	1	" " 0, " " 1
7	.. ..	.. ..	1	" " 1, " " 0
8	.. ..	Yes	2	" " 2, " " 0
9	.. ..	Yes	1	Lobus Spigelii.
10	.. ..	Yes	17	Right lobe 16, left lobe 1
11	.. ..	.. ..	{ too numer. ous to count }	In both lobes.
12	.. ..	.. ..	10	Right lobe 2, left lobe 8
13	.. ..	Yes	3	" " 3, " " 0
14	.. ..	.. ..	5	" " 5, " " 0
15	.. ..	Yes	1	" " 0, " " 1
16	.. ..	.. ..	3	" " 3, " " 0
17	.. ..	Yes	1	" " 1, " " 0
18	.. ..	.. ..	1	" " 1, " " 0
19	.. ..	.. ..	1	" " 1, " " 0
20	.. ..	Yes	{ very numerous }	Right lobe, all but 2.
21	.. ..	Yes	1	" " 1, left lobe 0
22	.. ..	.. ..	30	" " 23, " " 7
23	.. ..	Yes	4	" " 4, " " 0
24	.. ..	Yes	1	" " 1, " " 0

In those cases which showed multiple abscess of the liver it was almost invariably found that the oldest abscesses, as shown by their size and the thickness of the abscess wall, occurred in the right lobe posteriorly or near the dome. In only 1 case of multiple abscesses observed did the pathological findings seem to indicate that the abscess formation commenced first in the left lobe. My experience, as given in the above table, is well borne out by the collective investigation made by Roux as to the location of liver abscesses in amoebic dysentery. He collected 639 cases with the following result: 435, or 70.8 per cent., were situated in the right lobe; 85, or 13.3 per cent., in the left lobe; and 2, or 0.3 per cent. in the lobus Spigelii. A study of my cases, as given in the table, will also show that the majority of the cases showed multiple abscess, thus proving that the general opinion that amoebic abscess is nearly always single is a mistake. In fact, some authorities have counted several thousand abscesses in the liver and have separated amoebae from these abscesses. I have seen instances in which the abscesses were too numerous to count.

Rupture of a liver abscess is of comparatively frequent occurrence, the perforation taking place into the abdominal cavity, the pleura, the pericardium, or into any of the adjacent viscera. In 24 cases observed here, 7 were accompanied by rupture, perforation occurring in the following localities: Right pleural cavity, 5 cases; left pleural cavity and the pericardial cavity, 2 cases. As the location of the rupture of amœbic abscess is of great surgical importance, I have prepared the following table giving the results of various observers as regards this question.

Observers.	Case of liver abscess.	Case of rupture	Perforation.	Pleura.	Lung.	Colon.	Stomach.	Bile ducts.	Vena cava.	Kidney.	Lumbar region.
Waring . . . . .	300	68	14	23	15	2	1	1	3	2	2
Dutroulau . . . . .	66	25	2	10	7	1	1	1	..	..	1
Roux . . . . .	162	54	11	17	14	3	6	..	..	..	..
Haspel . . . . .	25	6	4	13	..	..	..	..	..	..	..
Cambay . . . . .	10	9	..	12	..	..	..	..	..	..	..
Howard . . . . .	6	9	5	5	..	..	..	..	..	1	..
Craig . . . . .	21	8	and pleura 2	..	..	..	..	..	..	..	..

In one case observed at this hospital an amœbic abscess of the liver was operated upon successfully, in which no history of a previous attack of dysentery could be obtained. That an amœbic abscess can occur primarily in the liver without a previous dysentery, has been established beyond a doubt by a case reported by Buxton of a woman dying at the Philadelphia Hospital, in which the autopsy showed four large abscesses in the right lobe and one in the left lobe of the liver, the pus of each containing amœbæ, although the large and small intestines were absolutely normal in appearance. In all probability, the case which I have just mentioned is a similar one to that of Buxton.

It is not my intention here to discuss the etiology of amœbic abscesses further than to say that they are, without doubt, due to the infection of the liver tissue by the *amœba coli*, probably reaching the organ through the portal vein, although Councilman thinks that they reach the liver through the peritoneal cavity after penetrating the intestine. Other authorities regard the lymphatics as responsible for the liver infection.

**Bacteriological Examination.** In all the cases which came to autopsy, sections were made of the walls of the liver abscesses, and in the majority of cases amœbæ were demonstrated. An examination of the pus from the abscess cavity did not result, as a rule, in a demonstration of amœbæ unless it was removed by scraping from the abscess wall. By the later method amœbæ were demonstrated without difficulty. A bacteriological examination of the pus by means of cultures resulted in about 50 per cent. of the cases showing a mixed infection with some other organism, princi-

pally staphylococci, streptococci, or the *bacillus coli communis*. My observations as regards the bacteriology of the pus in liver abscess confirms that of many other observers who have found that in about one-half the cases there is a mixed infection. It is in these cases, also, that we find the yellow or greenish pus, rather than the reddish or chocolate-colored pus, which is so typical of amœbic infection.

*The Spleen.* Altogether the most common complication observed in the spleen was cirrhosis of that organ, which was present in 48 cases, 25 of the chronic specific form of dysentery and 23 of the amœbic form. Infarct of the spleen was observed in 7 cases, 5 of the chronic specific form and 2 of the amœbic form. A very common condition found in the spleen was pigmentary degeneration, which was especially noticeable in sections of the organ, the pigment being in the form of irregular collections of fine granules, brownish-yellow in color, scattered especially along the edges of the fibrous trabeculæ and around the Malpighian corpuscles. In 21 cases melanosis of the spleen was very noticeable, 16 of the cases suffering from amœbic dysentery. As, in almost every case the melanosis was due to previous malarial infection, it is of interest as showing how often amœbic dysentery is complicated by malarial fever.

#### *Complications Observed in the Digestive System.*

As would be expected, chronic enteritis is the most frequent of all complications in the digestive system. This condition was observed in 70 cases, 42 of the chronic specific form, and 28 of the amœbic. The enteritis present varied considerably, of course, as regards its extent and severity, but it may be stated as a general rule that all cases of dysentery are complicated by an enteritis of at least medium severity, and it is my belief that this enteritis is of very great importance as regards the prognosis as to recovery. Many cases which have died at this hospital have undoubtedly succumbed from the effect of the enteritis, rather than from the dysenteric infection.

Chronic gastritis is next in frequency to enteritis as a complication, occurring in 60 cases, 31 of the chronic specific form and 29 of the amœbic form of dysentery. In all the cases the gastritis present was of severe character, and taken with the enteritis certainly militated greatly against the patients' recovery.

Perforation of the intestine through an ulceration occurred in 4 cases, 3 of them suffering from amœbic dysentery, and 1 from the chronic specific form. All of these cases resulted in death from peritonitis.

Acute peritonitis complicated the dysenteric process in 10 cases, 8 suffering from the amœbic form and 2 from the chronic specific form; 4 of these cases were due to perforation by dysenteric ulcers, and 6 to pus infection from liver abscesses.

In this study of the complications of dysentery, I have tried to call attention to their great frequency and importance, as I believe they are often overlooked, much to the detriment of the patient's welfare. It will be seen that the chronic specific form of the disease is most prolific in complications, and in our experience this form of dysentery has been the most fatal with which we have had to deal. The most serious complications accompanying the disease, either specific or amœbic, are nephritis, abscess of the liver, and chronic enteritis and gastritis. These occurred so frequently, especially the two latter, that treatment should be especially directed toward them.

In conclusion, I append a table showing the complications observed in the 120 cases analyzed, which may prove of service to students of this subject.

Total number of cases 120: amœbic, 60; chronic specific, 60.

Complication.	Total number.	Amœbic dysentery.	Chronic specific dysentery.
Subacute parenchymatous nephritis . . . . .	45	22	23
Acute parenchymatous nephritis . . . . .	36	17	19
Chronic interstitial nephritis . . . . .	20	14	6
Chronic enteritis . . . . .	70	38	42
Chronic gastritis . . . . .	60	29	31
Venous congestion of lungs . . . . .	59	24	35
Cirrhosis of spleen . . . . .	48	23	25
Fatty degeneration of liver . . . . .	42	20	22
Venous congestion of liver . . . . .	36	16	20
Chronic pleurisy . . . . .	26	7	19
Abscess of liver . . . . .	24	22	2
Melanosis of spleen . . . . .	21	16	5
Chronic bronchitis . . . . .	16	6	10
Edema of pericardium . . . . .	12	2	10
Empyema . . . . .	11	10	1
Bronchopneumonia . . . . .	14	2	12
Cirrhosis of liver . . . . .	10	4	6
Arieroecrosis . . . . .	12	4	8
Pulmonary tuberculosis . . . . .	10	6	4
Acute peritonitis . . . . .	10	8	2
Acute pleurisy . . . . .	8	2	6
Lobar pneumonia . . . . .	9	2	7
Acute pericarditis . . . . .	6	2	4
Infarct of spleen . . . . .	7	2	5
Abscess of lung . . . . .	4	2	2
Intestinal perforation . . . . .	4	3	1
Acute bronchitis . . . . .	2	2	
Pyelonephritis . . . . .	2	1	1
Abscess of kidney . . . . .	2	1	1
Biliary calculus . . . . .	1	---	1
Infarct of lung . . . . .	1	---	1
Infarct of kidney . . . . .	1		1
Urinary calculi . . . . .	1	1	
Valvular disease of heart . . . . .	1	1	