

ondary to new growth elsewhere. The liver grows rapidly under observation, is usually painful (80 per cent of 168 Massachusetts Hospital cases) and nodular. Jaundice and irregular fever are present in over one-half of the cases (54 and 62 per cent respectively), and the loss of flesh and strength is marked.

Obstructive jaundice (due to stone, stricture, catarrh, or tumor of the bile ducts, or to any other cause) often produces an enlarged liver. Diagnosis depends on the evidence of a cause for the obstruction and the absence of hepatic nodules, pain, or a rapid increase in the size of the organ.

Syphilitic liver may be distinguishable from cirrhosis or from malignant disease only by the therapeutic test. The history or present evidences of alcoholism or of syphilis are important factors in diagnosis, but, since syphilis may simulate the nodular liver of malignant disease or the general enlargement and portal stasis of cirrhosis, it is essential to give antisyphilitic treatment in all doubtful cases of liver disease.

Abscess of the liver produces enlargement, pain, fever, leucocytosis, and chills in typical cases, but any of these symptoms may be absent and diagnosis is often difficult. The presence of a possible cause (amoebic dysentery, appendicitis) is important evidence. The enlargement is more apt to be upward and to the right than in other liver diseases, since the pus usually starts in the right lobe and burrows upward. Hence many cases are mistaken for empyema (see above, page 352). Should fluctuation appear externally the diagnosis is usually obvious, but in many cases this does not occur.

Soft new growths and syphilis may be almost indistinguishable from abscess by local signs, but jaundice is much commoner in malignant disease and the liver of syphilis is often irregular. The history is of value.

Suppurative cholangitis or *pylephlebitis* gives us practically the same symptoms as abscess, but the spleen is enlarged in about one-third of the cases.

Amyloid liver is recognized by the presence of an appropriate cause (chronic suppuration or syphilis) and the evidence of amyloid

in other organs (enlarged spleen, albuminuria, diarrhoea). The liver is smooth, not irregular as in hepatic syphilis.

The *leukæmic liver* is recognized by blood examination; the pseudo-leukæmic liver by the normal blood and the histological examination of the glandular enlargements which always accompany it.

Hydatid cyst is rarely to be diagnosed by physical signs. The history of a residence in Australia, Iceland, certain parts of Germany, or of the British Isles is important evidence, since the disease has never been known to originate in North America. Physical examination may enable us to make out that the hepatic enlargement is due to a cystic tumor, tense and elastic, with notable absence of constitutional disturbances (Rolleston).

(c) *Atrophy of the Liver.*

Diminution in the size of the liver can hardly ever be demonstrated satisfactorily during life, since we must rely upon percussion for our evidence, and percussion of the upper and of the lower border of the liver may be rendered difficult by distention of the lung (emphysema) or of the colon. Atrophy occurs in a small proportion of the cases of *hepatic cirrhosis* and in *acute yellow atrophy*, but is rarely recognized in either condition. The rapidly fatal course of the latter disease with jaundice and a "typhoidal state" contrasts with the prolonged portal stasis characteristic of cirrhosis.

(d) *Portal Obstruction.*

A characteristic group of signs manifest the presence of an obstacle to the flow of blood through the portal system. This group includes:

1. Hæmatemesis and dyspepsia.
2. Ascites¹ (see page 372).
3. Splenic enlargement.¹

¹ Ascites and splenic enlargement are not purely mechanical phenomena. Toxæmia and sometimes chronic peritonitis or cardiac failure contribute.

4. Collateral dilatation of veins about the navel and elsewhere.

Hæmatemesis is usually due to rupture of dilated œsophageal veins, occasionally to gastritis.

Splenic enlargement is more marked in the rare cases associated with chronic jaundice (*biliary cirrhosis*) and without ascites.

The *cause* of portal obstruction is: 1. Cirrhosis, in ninety-five per cent of the cases. The remaining five per cent is made up of: 2. Obliterations of the portal vein, usually by thrombosis or tumors.

(e) *Jaundice.*

The *yellow staining* of sclera, skin, and mucous membranes, with or without changes in the color of the urine and fæces, is known as jaundice. I have classed it as a general rather than a local sign of liver disease, because it may occur from toxæmia and independent of any lesion of the liver; for instance, in septicæmia, malaria, yellow fever, and pernicious anæmia. It is true, nevertheless, that all jaundice is due ultimately to obstruction in the path of the bile stream. In the toxæmic cases the obstruction is due to inflammation of some of the *small ducts* within the liver. In the cases due to stone or cancer the obstruction is in the *larger bile ducts*, usually the common duct.

Causes of Jaundice.—The four types most often seen are:

1. Jaundice of the new-born (occurs in from thirty to eighty per cent of all children).

2. Catarrh of the bile ducts ("catarrhal jaundice").

3. Gall stones, especially in the common duct.

4. Cancer (pancreas, glands, liver, or bile ducts).

Less common are the cases due to:

5. Cirrhosis of the liver.

6. Syphilis of the liver.

7. Infectious disease or toxæmia.

Rare causes are:

8. Acute yellow atrophy, with or without phosphorus poisoning.

9. Weil's disease and other types of infectious jaundice.

10. Congenital obliteration of the bile ducts.

The *results of jaundice* upon the body are chiefly the following: (a) Slow pulse (often below 60). (b) Itching of the skin. (c) Mental depression. (d) Hemorrhagic tendency (which renders operation dangerous).

In mild cases there is no bile in the urine; in severe cases it is almost always present. The stools are *gray* or *clay-colored* when the obstruction is in the larger bile ducts outside the liver, but in the toxæmic forms of jaundice abundance of bile passes into the intestine and the stools are of normal color.

Diagnosis of the cause of jaundice depends on the following considerations:

1. If it occurs during the first four days of life without any other symptom and passes off within a few weeks, we call it simple *jaundice of the new-born*.

2. If the attack is preceded by gastro-intestinal disturbances, usually in a young person, if pain and hepatic enlargement are slight or absent, and if the jaundice passes off within six weeks, we term it "*catarrhal jaundice*" (though the pathology of this and of the preceding condition is unknown).

3. If there have been attacks of biliary colic (see below, page 393), intermittent fever with intervals of good health, and no considerable or progressive enlargement of the liver or gall bladder, *stone in the common duct* is probably the diagnosis.

4. *Cancer* of the pancreas, duodenal papilla, bile ducts, or of the glands at the hilus of the liver, produces enlargement of the gall bladder, pain, and a jaundice of the intensest type known. Loss of flesh and strength is rapid. Cancer of the liver itself gives a rapidly enlarging, nodular liver with steady pain, and, in fifty per cent of cases, jaundice.

5. In ordinary *portal cirrhosis* the jaundice is less intense and permanent, portal stasis is usually evident, and there is generally a moderate enlargement of the liver.

6. Enlargement of the liver with jaundice *lasting for years* in young people is called *biliary cirrhosis*.

7. *Hepatic syphilis* produces jaundice in a small percentage of cases, and under these conditions is so apt to be mistaken for cancer

that I think all cases supposed to be cancer in or near the liver should be given a course of antisyphilitic treatment. Other lesions or symptoms of syphilis will naturally influence us.

8. The jaundice secondary to septicæmia, yellow fever, malaria, and pernicious anæmia is usually slight and rarely shows in the urine or bleaches the stools. The evidence of the anæmia or of an infection makes evident the nature of the jaundice.

9. Acute yellow atrophy cannot be determined without autopsy. Its chief symptoms are given in its name.

10. Weil's disease is the term applied to some or all of the groups of infections of unknown origin which are accompanied by jaundice. From catarrhal jaundice it is to be distinguished during life only by convincing evidence of general infection.

Congenital obliteration of the biliary ducts is suggested by the occurrence of congenital, intense, and permanent jaundice with hemorrhage and enlargement of the liver and spleen.

(f) *Loss of Flesh and Strength*

in cases presenting other signs of liver disease is commonest in uncompensated cirrhosis and in malignant disease, but may occur in gall-stone disease, syphilis, or abscess. I have known a physician greatly alarmed at his own rapid emaciation, though his symptoms (jaundice and colic) pointed to stone in the common duct and operation proved this diagnosis correct.

(g) *The Infection Group of Symptoms.*

These symptoms—viz., fever, chills, sweats, leucocytosis, disturbances of digestion and sleep—are oftenest seen in: 1. Cholangitis. 2. Hepatic abscess.¹ 3. "Ball-valve" or "floating" stone in the common duct. In the last disease jaundice is usually present; in the others usually absent. In cancer of the liver fever and leucocytosis are often present, but the other signs of infection are rarely seen.

¹ With or without pylephlebitis.

(h) *The Cerebral Symptoms of Liver Disease.*

These vary from simple depression and apathy to delirium, convulsions, and coma. Severe symptoms are oftenest seen at the end of uncompensated cirrhotic cases; eighty-two per cent of our fatal cases showed during the last days of life symptoms indistinguishable from those of uræmia.

THE GALL BLADDER AND BILE DUCTS.

(a) *Biliary colic*, and (b) *enlarged gall bladder*, with or without tenderness and pain, are the data on which (with the evidence of local or general infection, cachexia, intestinal obstruction, and jaundice) our knowledge of gall-bladder disease is built up.

Differential Diagnosis of Biliary Colic.

Biliary colic, due to impaction of a gall stone in the cystic or common duct, is a sudden, agonizing pain in the gastric or hepatic region, radiating thence in all directions, with fever, chills, and vomiting. In most cases the attack lasts from three to twelve hours (Rollestone) unless relieved by morphine. The pains are said to be worse than those of labor, and are often accompanied by tenderness over the hepatic region. The liver or gall bladder is seldom palpable. Jaundice precedes or follows the attack in about one-half of the cases.

Renal colic differs in that it usually starts over the kidney (in the back) and radiates down the ureter, while the urine is apt to be bloody but free from bile.

Floating kidney produces pains which cannot in themselves be distinguished from biliary colic. The palpation of the floating kidney may be all that makes us suspect that organ to be the cause of suffering.

Peptic ulcer (gastric or duodenal) produces sharp, paroxysmal pain, but this usually follows a meal, can be relieved by alkalis, and produces no fever, chill, or sweat. Hyperchlorhydria may

produce similar pain at night (the commonest time for biliary colic), but is relieved by food or alkali.

Lead colic is almost always associated with lead dots in the gums and stippling of the red corpuscles (see pages 24 and 470). The history of work as a painter or plumber and the absence of tenderness assist the diagnosis.

Enlarged Gall Bladder.

An enlarged gall bladder cannot be felt unless it is *stretched tight* by its contents; a very *tense gall bladder* may be palpable without much enlargement. Probably most enlarged gall bladders are not tense, and so cannot be made out without operation. When palpable the organ presents as a smooth, rounded, pear-shaped tumor at the margin of the ribs in the nipple line.

The causes of enlargement are:

- (a) *Stone in the cystic duct*, at the neck of the gall bladder.
- (b) *Cancer of the pancreas* or other tumor obstructing the common duct from without.¹
- (c) *Cholecystitis*.

In the first of these jaundice is rarely present (ten to fifteen per cent—Riedel²), and colic with or without palpable tumor is our guide to diagnosis.

In cancerous obstruction there is intense and permanent jaundice.

In *cholecystitis* there is usually no jaundice, but all the signs of local and general infection—*pain, tenderness, leucocytosis, and fever*—are present. In acute cases the symptoms, however, may be indistinguishable from those of appendicitis, since the pain may be referred to the navel or even to the appendix region. Many mistakes of diagnosis between appendicitis and acute cholecystitis occur, and must occur until our present diagnostic resources are increased.

¹ Courvoisier has shown that if the common duct is obstructed by a gall stone the gall bladder is very rarely enlarged.

² Riedel: Berlin, klin. Woch., 1901, No. 3.

Results of Cholecystitis.

(a) *Adhesions about the gall bladder* may involve the duodenum or pylorus, and produce kinking and consequent dilatation of the stomach and chronic dyspepsia.

(b) *Intestinal obstruction* (see below, page 401) is occasionally produced by the ulceration of a large gall stone from the gall bladder into the intestine, usually the small intestine or duodenum.

THE PANCREAS.

Diseases of the pancreas can very rarely be diagnosed by our present methods. If greatly enlarged (tumor, cyst, hemorrhage) it may become palpable as a deep epigastric tumor, but we are rarely able to differentiate such tumors from those of the retroperitoneal structures.

Indirect and uncertain information is afforded by the presence in the urine of *sugar or fat-splitting ferments*¹ and in the stools by the appearance of an abnormal amount of *muscle fibre* or of *fat* not otherwise to be accounted for (*i.e.*, in the absence of jaundice, diarrhoea, tuberculous peritonitis, or large meals of fat).

Cancer of the pancreas may sometimes be suspected on account of its pressure effects. Intense and permanent jaundice with enlarged (perhaps palpable) gall bladder and liver may be due to the pressure of cancer in the head of the pancreas upon the common bile duct. Ascites and swelled legs may be produced by compression of the inferior vena cava. But the diagnosis can rarely be more than a suspicion, for cancer of the duodenal papilla or retroperitoneal sarcoma may produce similar pressure effects. Should these pressure effects coincide with a glycosuria and the presence of a deep-

¹ The suspected urine is neutralized with potassium hydroxide and one portion of it boiled to destroy any ferment that may be present. To this and to the unboiled portion ethyl butyrate is added. In twenty-four hours an acid reaction may appear in the unboiled specimen if it contains a ferment, while the other specimen shows no considerable change in reaction.

seated, almost immovable tumor, the suggestion of pancreatic disease becomes more plausible.

Acute pancreatic disease, hemorrhagic or suppurative, is not recognizable until it is seen at an operation undertaken for the relief of some grave, acute lesion of the upper abdomen. Perforated gastric ulcer and intestinal obstruction may give identical symptoms, viz., sudden, intense, epigastric pain and tenderness, with vomiting and collapse. One or two days later a tender epigastric tumor may appear, but this presents no characteristic peculiarities.

Pancreatic cyst presents a very slow-growing, possibly elastic, deep-seated epigastric tumor, which usually produces little in the way of pressure effects, and may be associated with glycosuria and fatty stools.

Bronzed Diabetes.—The association of diabetes with bronzing of the skin and enlargement of the liver is strongly suggestive of chronic fibrous pancreatitis.

In any doubtful case the possibility of pancreatic disease is increased: (a) If improvement follows the administration of pancreatic preparation; (b) if glycosuria follows the administration of 100 gm. of glucose (alimentary glycosuria).

Incidence of Pancreatic Disease.

The following table is from the Massachusetts General Hospital records (1870–1905):

| | Cases. |
|-----------------------------|--------|
| Cancer of the pancreas..... | 35 |
| Acute pancreatitis..... | 13 |
| Chronic pancreatitis..... | 10 |
| Cyst of the pancreas..... | 3 |
| Total..... | 61 |

CHAPTER XX.

THE INTESTINE, SPLEEN, KIDNEY.

THE INTESTINES.

Incidence of Intestinal Disease (excluding diarrhoea and constipation) at the Massachusetts General Hospital, 1870–1905.

| | |
|---|-------|
| 1. Appendicitis..... | 3,314 |
| 2. Acute obstruction..... | 142 |
| 3. Cancer (above the rectum)..... | 155 |
| 4. Dilated colon..... | 6 |
| 5. Tuberculosis..... | 2 |
| 6. Faecal impaction (above the rectum)..... | 2 |
| Total..... | 3,621 |

Data for Diagnosis.

THE data on which are based all our conclusions regarding intestinal disease are obtained from the following sources:

1. *Pain* (colicky or steady) and *tenderness, tenesmus*.
2. *Gaseous distention* and the noises and sensations produced by gas.
3. *Diarrhoea or constipation*.
4. *Muscular rigidity* of the belly wall protecting an intestinal lesion.
5. *Tumor*, palpable or visible, and believed to be connected with the intestines (together with the effect of catharsis on such tumor).
6. *Visible or palpable peristalsis* (see page 364).
7. *Digital or visual examination of the rectum* (see page 441).
8. *Examination of the intestinal contents*, faecal and other (see page 402).
9. *Inflation of the colon* through the rectum (see page 370).
10. *Indicanuria*—rarely of value.