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PATHOLOGICAL ANATOMY OF CHOLERA.

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In order to understand the theory or treatment of any disease, a knowledge of its pathological anatomy is absolutely essential. This fact is more often overlooked with regard to cholera, perhaps, than to any other disease, and for the very natural reason that no investigations in this direction have as yet thrown much light upon the subject. Still, to properly appreciate the numerous theories constantly brought forward, the results, both positive and negative, of the *post-mortem* examinations should be present to the mind. To bring together facts scattered through many different treatises has been the object of the present *résumé*.

There are some few cases on record where patients have succumbed to the prodromic symptoms before the cholera proper had declared itself, but as there have been preserved none of the pathological changes I shall pass at once to those recorded after death during the second period, or that of collapse.

In these cases there is frequently a sudden elevation of temperature; invariably the body loses its heat but slowly. The muscular spasms often continue to a more or less extent, and, in India, cases are reported in which the attendants have been forced to secure the limbs of the dead, so great was the moral effect upon the neighboring patients. The blueness of the face and members remains; the eye is dull; the subcutaneous cellular tissue is dry; the muscles are dark colored and but slightly consistent (exceptional, Valleix). This bluish appearance is also noticed in the greater part of the spongy bones, and even to the roots and crowns of the teeth. The digestive canal is pale and discolored in places, but in general offers a dark color, due to the arrest of the blood. From the œsophagus to the rectum, but particularly at the end of the ileum and in the cœcum and colon, is often found an eruption of hard, opaque bodies, about the size of the head of a pin, which are nothing more than the

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swollen follicles, such as are often found in other diseases where the serous exhalation is increased. The stomach and intestines contain a variable quantity of a flocculent liquid, sometimes acid, sometimes alkaline in reaction, and of an insipid odor. Most authors deny the presence of any bile, but Dr. J. C. Dalton and Niemeyer say that the bile is present, but recognized with difficulty from its extreme dilution. In color this liquid varies from a greyish white to a chocolate, the darker being more common in the lower parts. Its nature is generally considered to be that of the serum of the blood, although Andral and Bouillaud consider it mucous, and Bouillaud attributes to it some specific qualities. The flocculi floating in it, as well as the creamy, grayish-white membranes with which parts of the entire digestive canal are covered, consist of epithelial scales in different stages of perfection. Valleix, Bouillaud and several others have occasionally noticed in the gall-bladder the presence of a liquid resembling that found in the intestines, while J. Brown has usually found it turgid with black blood. Some cases are reported in which it has been distended by bile. Virchow has signalized an enormous accumulation of fat in the villi of the intestines, a fact attributed to the ordinary occurrence of the attacks during the process of digestion, when the vessels are loaded with chyle. In other respects the biliary and lymphatic vessels are unaltered. The kidneys, particularly in their cortical substance, are engorged with black, diffuent blood, and a certain flaccidity of their tissue is noticed by Dr. Dalton, as well as a peculiar smell, resembling that of molasses, which is exhaled from their cut surface and replaces the ordinary renal odor. The liver is congested with black blood; the spleen is generally small and hard, while the other parenchymatous tissues are congested and of a peculiar bluish color; the bladder, ordinarily empty and retracted, but occasionally containing a certain amount of altered mucus, exhibits on its internal surface membranous patches similar to those found in the digestive canal; the lungs are usually collapsed, flabby and hardly obstructed—rarely, however, there is extensive congestion, and apoplectic centres even have been found in them. Small patches of the whitish membrane spoken of in connection with the digestive canal are sometimes found in the bronchial tubes. The heart is small, flabby and easily torn; the right ventricle filled with black, sticky blood, the left usually empty. Ecchymoses are sometimes found on the pericardium and on the endocardium of the left ventricle. The whole venous system is engorged with the same black, sticky blood, which coagulates very slowly and parts with but little if any of its serum. Upon exposure to the air, according to Rayer's investigations, it oxidizes more slowly than in its normal condition, owing to the absence of the saline substances which favor oxygenation. Schmidt found the oxygen diminished more than one half. The fibrin, albumen and salts have been found deficient by most chemists, although Robertson, of Edinburgh, states that the fibrin is

usually in large amount, and Andral that albumen is present in normal quantity. Becquerel concludes that the proportion of the globules is increased; the serum, less abundant and denser, contains an abnormally large proportion of extractive matters, salts, and particularly fatty matters. Microscopic examination has shown the globules normal in appearance, but Donné has remarked a certain viscosity, which prevents them from slipping easily in the liquid in which they swim. Dr. Parkes has observed that, in some cases, the addition of a few drops of the liquid taken from the intestine would restore the arterial color to the blood. The serous membranes are all more or less dry and sticky, the peritoneum particularly so; the cerebral and cerebro-spinal vessels are more or less engorged; the cerebral substance is likely to be congested, and even the nerves and their ganglions may be in the same condition, although the nerve tissue is never altered. The semilunar ganglion, thought by some authors to be the original seat of the disease, has been found normal by the majority of pathologists.

In subjects who have died in the period of reaction, there is less venous but more active and inflammatory congestion; the brain is dotted with puncta cruenta; the lungs are sometimes inflamed or hepatized; the blood is redder and contains more serum; the peculiar liquid has disappeared from the digestive canal; the serous membranes are moist; the agminated follicles are occasionally a little swollen, but without showing any of the characteristic appearances of typhoid fever; the bladder contains a variable quantity of urine.

Thus far the alterations given us by pathologists are (1st), the general injection of the venous system, giving the peculiar color to nearly all the organs; (2d), the characteristic liquid found in the digestive canal; (3), the absence or altered condition of the mucus in the different cavities which are lined by a mucous membrane; (4th), the development of the glands of the intestine—evidently most insufficient grounds for the basis of anything more than a purely speculative hypothesis.

CASE OF POISONING BY CYANIDE OF POTASSIUM.

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DR. TAYLOR says of the cyanide of potassium, that it is one of the most formidable poisons known to chemists. It has destroyed life in a quarter of an hour; a dose of five grains has proved fatal in three instances. The symptoms which the cyanide produces are similar to those occasioned by prussic acid. He reports five cases of poisoning, of which one recovered. The dose, according to the Dispensatory, is the eighth of a grain.

The preparation which the patient took in the present instance was that used in electro-plating, and consisted of the following ingre-