

MEMBRANOUS COLITIS.*

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Membranous colitis occurs most frequently in infants over six months old and less than two years, and may appear in those previously in good health. It is usually a very severe irritation, greatly endangering the health and life of the child. While it may follow a catarrhal disturbance, it commonly appears suddenly accompanied by vomiting, high fever, loss of appetite, severe pain and frequent large green stools of a mucous character. The vomiting usually disappears early and the temperature falls within safe limits. Should this not occur the prostration is very great and the child melts away so rapidly that its life is quickly endangered. Usually the abdomen is tender and somewhat swollen. The pain is severe and frequent, especially for a time before stool. Where the irritation is low in the colon, there is marked and severe tenesmus at stool causing an inch or two of the mucous membrane of the bowel to protrude. This is intensely congested and often shows patches of pseudo-membrane on its surface, which fact establishes the diagnosis.

The stools resemble those in catarrhal enteritis, except in the amount of blood, which is generally greater and more constantly present; but the only feature which establishes the diagnosis is the appearance of the pseudo-membrane. This shows as grayish-yellow opaque masses after the stool is washed away. It is then easily distinguished from the accompanying mucus, which is commonly large in quantity. The pseudo-membrane seldom appears in large amounts, and usually disappears from the stools, while the mucus and blood may continue for considerable time afterwards. Usually improvement is indicated by the absence of the blood and the lessening of the mucus, with the return of healthy yellow stool mixed with the mucus. Where this does not occur, and the mucus continues for more than a week as the predominating feature in the stool, the emaciation is marked and the case rapidly becomes grave indeed. The severity of the attack and the gravity of the prognosis are in proportion to the amount of mucus passed daily and the length of time it continues to come. These cases generally recover in ten days or two weeks; where they continue longer the prospect of recovery is not good.

This disease is very rare in young infants under six months of age and is mostly confined to those that are hand-fed, and also improperly fed. Rarely do we find a case appear in a nursing infant, particularly during the first months of its life. In hand-fed infants also, where intelligence demands yellow stools, and industry secures their continuance, it is indeed a very rare thing to see cases of "membranous colitis."

It has been the fortune of the writer to meet with three cases of this disease this year in very young infants. One was in a nursing infant ten days old; one in a hand-fed infant eighteen days old; and the last in an infant partly nursed and partly hand-fed, nine weeks old.

The first or nursed one was an infant, strong and well nourished, weighing nearly nine pounds when born. The mother was a large, active, rosy-colored woman, but one who suffered greatly from acidity and consequent heartburn during her pregnancy. So great was this that

she was compelled to live almost entirely during the last two months of her pregnancy on meat, milk and eggs. She had a feeble labor, necessitating forceps delivery, with laceration of the perineum, which was repaired; she made an uneventful recovery, save that she persisted in having a temperature of 102 for several days, and also about 100 for a month or more after her labor. This was accompanied by a coated tongue. The mother was very carefully dieted from the day of labor, and her milk came on the fourth day. The child's bowels were green continually from birth and no food except a little sugar water and a small dilution of cream was fed until the mother nursed it. The stools continued green and slimy, showing only small traces of yellow, till the ninth day, when the child became violently disturbed with high fever, great pain, frequent green mucous stools, straining and tenesmus. It lost flesh rapidly and in the third day of its sickness passed some patches of opaque yellowish membrane looking much like those cast from the throat in diphtheria. The infant was removed from the breast entirely and fed with a cream mixture, on which it convalesced rapidly; the stools became yellow and well formed and all mucus disappeared in ten days. A microscopic examination of this membrane, made by Dr. Perkins, showed the membrane was structureless, like a mass of fibrin with no mucus or epithelial cells.

Culture from this pseudo-membrane showed a bacillus belonging to the colon group, but not the true colon bacillus described in text-books, as it did not coagulate milk, nor give the indol test. The structureless character of this pseudo-membrane showed it to be an exudate due to intoxication from the toxins of these bacilli. Injections of these toxins and the germs into guinea-pigs' abdomens showed an exudate formed over the intestines and the liver, having the same structureless character as the sample.

The second infant was eighteen days old when the writer was called in attendance. This was the fourth child of a mother unable to nurse her children. It had been fed at first on diluted cow's milk, then on diluted cream, next on almost raw oatmeal water and cream, with the result of loss of flesh, constant colic, constipation and stools, when voided, of yellow hard balls, coated with slime and having very foul odors. The symptoms and the recurring colic pointed to a sore spot in the bowel somewhere in the colon, as the pain always returned with great violence about fifteen minutes before stool. Six days after my first visit the stool contained a mass of tough yellowish-white membrane, also looking like that seen in the throat in diphtheria. With a careful adjustment of a cream mixture and the voiding of this membrane, this infant made a rapid recovery, having healthy stools.

A microscopic examination, also by Dr. Perkins, showed this membrane contained fibers of oatmeal husks, pus cells, and small masses of mucous tissue, and imbedded in the tissue were the bacilli of the streptococcus. Cultures made from this membrane showed the proteus vulgaris and streptococcus. Injections of this culture in very small quantities killed guinea-pigs and rabbits, and on the intestines and liver a similar membrane was developed. Experiments show that the growth of the streptococcus in the presence of this very fatal proteus vulgaris, increases the toxic property of the former.

Feeding the nearly raw oatmeal fibers to this infant caused abrasion of the mucous membrane, thus forming

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a favorable nidus for the entrance of these germs and the consequent formation of this membrane. This child now continues healthy and grows rapidly.

The third child, 9 weeks old, had been nursed by its mother, a delicate neurotic, suffering from middle ear disease. She had rose asthma disturbance every year so that she was compelled to leave her home in May and spend her summers in Lake Superior ports. She nursed her baby for a few weeks and it grew to ten pounds in weight. Sickness compelled her to wean it at five weeks old. Improper adjustment of food to the child's digestive power soon set up a disturbance, causing vomiting and colic with great fermentive accumulations of gas in the stomach and bowels. Changes in the food failed to reach the correct digestive results and the little one continued in distress, losing sleep and weight, till at 9 weeks old, when the writer first saw the infant, it weighed only eight pounds. Examination showed it much emaciated with a distended abdomen and the skin hanging loosely on its body and limbs. Vomiting followed every meal and constipation was the rule, with great pain before stools. The stools were yellow, dry, and covered with thick mucus. The pain at stool and the mucus over the discharges showed a sore spot low in the colon as in the second child. This infant had been fed too much at each meal and also had too much proteid in its food, thus causing indigestion, constipation and irritation of the colon. The nurse said it had passed some patches of membrane before my attendance, but I failed to find any. A careful adjustment of the food failed to make it grow and a wet nurse was necessary to save its life. With the latter it succeeded satisfactorily. The history of this case was so similar to that of No. 2, that the writer regrets his inability to secure a portion of the membrane for pathologic investigation.

While these cases do not conform to the usual symptoms seen in cases of membranous colitis, the writer feels that they belong to it, even though the pathologic evidences differ from each other. The very early age at which this irritation began and the varying character of the stools, make these cases interesting and is the writer's reason for presenting this subject. While only the first case showed the usual symptoms of loose bowels, recognized as accompanying "membranous colitis," the presence of membrane and mucus with pain at the stool even when with a constipated condition, establishes the fact that the irritation and distress are in the colon, and are of a membranous character. While the etiology is similar in these three cases, they show that the bacteriologic factors may differ greatly.

While the cultures from these two samples of membrane do not agree in character, one showing a colon bacillus and the other showing a mixed infection, the proteus vulgaris with the streptococcus, the irritation, pain and distress were similar, and the infants showed the same emaciation, fermentive disturbance and pain prior to stool.

The importance of recognizing the food as the cause of the sickness in both nursed and hand-fed infants, can not be overestimated. The difference in the character of the food will no doubt account for the different germs in these two cases, the nursed infant showing only a colon bacillus, while the hand-fed one showed two foreign ones.

Writers on this disease describe the loose slimy or mucous character of the stools and their great frequency; but here were two cases, Nos. 2 and 3, which

showed a constipated stool of yellow color and yet membrane was present in both.

These cases illustrate the absolute necessity there is always for the physician to examine the stools himself in gastro-enteric disturbances. Few parents or nurses are skilful and watchful enough to read carefully the digestive process as it is illustrated in this stool product. Only the experienced eye, nose and finger of the physician is capable of doing this work correctly. Only by the knowledge obtained in this way can a correct conception of the digestive errors be obtained, and consequently the right changes be made to meet this difficulty in each and every case of gastro-intestinal disturbance. Without such personal examination by the physician, his ideas of the situation are necessarily second-hand ones and the treatment liable to be wrong.

These cases also show that different bacilli have the power, by their irritative qualities, to form a false membrane on the mucous membrane of the bowels.

URETERAL CALCULUS ACCURATELY LOCATED BY THE X-RAYS AND REMOVED BY AN EXTRAPERITONEAL OPERATION.*

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PHILADELPHIA.

Henry E. S., aged 10, of New Bloomfield, Pa., was admitted to the Jefferson Medical College Hospital Oct. 25, 1900, at the request of Dr. E. E. Moore.

Neither his family nor personal history, other than as related below, have any bearing on the case. When he was 2 years old he had an attack of pain in which he passed bloody urine. Five years ago—at the age of 5—he had another attack of severe pain in the region of the left kidney. The pain extended downward into the scrotum and to the head of the penis. It was finally relieved by the application of heat and the use of morphin. Similar attacks have recurred at varying intervals, sometimes every three or four days, sometimes not for two months. During the winter of 1897-98, in several attacks he passed bloody urine and uric acid crystals. What he thinks was a small stone escaped in September, 1900, but neither he nor any one else examined it carefully. In February, 1900, he had scarlet fever and since then his attacks have been much more frequent and severe. He has never had any pain on the right side.

On admission the entire left side of the abdomen was so painful that it was impossible to make any diagnosis as to the location of a stone, though the diagnosis of calculus was perfectly clear and had already been made by his physician. The urine which he passed on admission was clear, amber-colored, sp. gr. 1013, reaction acid, no albumin, sugar, blood, pus or casts present, urea 1.1 per cent.

Dr. Charles L. Leonard took a skiagraph (see Fig.) which showed a ureteral calculus about one-half the size of the last joint of the little finger, in the left ureter, which was thought to be at the pelvic brim, but at the operation was found a little below this level somewhat nearer the bladder.

At the operation, Oct. 31, 1900, I made an oblique incision from above the crest of the ilium and parallel

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