

PEPTIC ULCER IN THE NEW-BORN.

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In May, 1927, a child eleven weeks old was admitted under my care into the Bristol Royal Infirmary suffering from a chronic ulcer of the stomach. At the autopsy I commented to the pathologist (Dr. A. D. Fraser) on the rarity of this condition in my experience, and he replied by showing me a specimen of duodenal ulcer in a child only five days old which he had found at an autopsy not very long before. This stimulated me to further enquiries and I have been surprised at the considerable literature there is on the subject.

The following notes of the case under my care were written by my clinical clerk, Mr. G. L. Ormerod.

Case 1. (J.A.N.)

Barbara J., aged 11 weeks, was admitted on May 31st, 1927, with the history that she had been losing weight for two months, and during the past two weeks had appeared to be in pain. For the last two months the stools had been green. On May 30th, she vomited at 4 a.m. and again in the early morning of the 31st. During these two days the stools were black instead of green.

The child was the youngest of five, the others being healthy, as were the parents. She was breast fed for 8 weeks and was then put on to Grade A milk with equal parts of water. Her weight at birth was 7½ lbs.

On admission she presented the appearance of a very pale, small, and silent infant with long soft hair. She weighed 5 lb. 8 oz. Her pulse rate was 120, temperature 97.2°, respirations 32. On the night after admission the child vomited, and passed black stools.

On June 2nd the note reads "vomited again three times yesterday immediately after food and still has melæna."

Apart from her appearance there was nothing abnormal discovered on examination of the child. The liver was not enlarged, the heart and lungs were normal and there were no hæmorrhages elsewhere. But the note says "there is an organ in the abdomen which feels like an enlarged stomach." This suggested hypertrophic stenosis of the pylorus, but no visible peristalsis was seen and no pyloric tumour was felt.

The melæna continued but the vomiting lessened. On the 6th I gave her small doses of belladonna with her feeds and this seemed to check the vomiting. On the 8th the note

reads, "still losing weight (5 lb. 2 oz.). She has vomited brown stuff and had melena yesterday; she is extremely pale." On the 9th she died.

P.M. Examination: There was marked œdema of the lungs and clear fluid in all the serous cavities. There was a little fresh blood in the stomach and black fœces in the intestine. On the posterior aspect of the cardiac orifice of the stomach there was an ulcer measuring 1.8 by 1.3 cm. situated half within the stomach and half in the œsophagus. The edges of the ulcer were terraced and the surrounding wall was fibrotic and thickened. The base was formed of adherent diaphragm muscle. A small eroded vessel could be seen at the pyloric end of the ulcer where the edge was undermined. Diagnosis: chronic peptic ulcer.

From the situation of the ulcer it is unlikely that any surgical operation could have relieved the condition.

Case 2. (A.D.F.)

Female, aged 9 days. For three days before death the child was blue in colour, and there was hæmorrhage from the nose and vulva, and melæna.

P.M. Examination: There was a congenital malformation of the heart. In the duodenum midway between the pylorus and the opening of the common bile duct there was an ulcer measuring 1.6 by 0.8 cm., the edge of this ulcer was irregular and hæmorrhagic but not terraced. Ulceration had penetrated to the subperitoneal layer which formed a clean but slightly bile-stained base. There were no adhesions. Here and there along the small intestine there were small submucosal hæmorrhages, but no ulceration. Diagnosis: acute peptic ulcer.

DISCUSSION.

As regards situation I have only found one instance recorded similar to Case 1, namely, that published by Henoch¹, and prefaced by the following words: 'This case stands quite alone.'

A child of 5 days, admitted 1st October, 1883. Since the third day of life, repeated vomiting of blood, with black bloody stools. The child sickly, shrivelled and anæmic. Extremities cold. Anal aperture covered with bloody fœces. Pulse imperceptible; temperature 87.8°. Takes no nourishment. Death that evening.

Autopsy: General anæmia. Spleen normal. Immediately over the cardia a ring of ulceration 1½ inches long surrounding the whole œsophagus. The submucosa remained free. It was swollen and infiltrated with greyish white matter. The ulcer was sharply defined above. Otherwise everything normal. "We were unable," writes the author, "to throw any light upon the origin and nature of this œsophageal ulcer."

Henoch's case was one of acute ulcer, and perhaps acute ulcers of the stomach, duodenum and even of the œsophagus, are not so very rare.

Cruveilhier², who is credited with having given the first description of the round ulcer of the stomach, illustrates in his *Anatomie pathologique du corps humain* (Paris, 1829-1835) ulceration of the stomach in the new-born. His figures represent the stomachs of new-born infants on the eighth and fifteenth days and one month after birth respectively. In each case the ulcers are multiple. In the third case he states that black vomiting had taken place. He goes on to quote Billard³ and agrees with him that a follicular ulceration of the stomach occurs in infants which may produce ulceration in a few days.

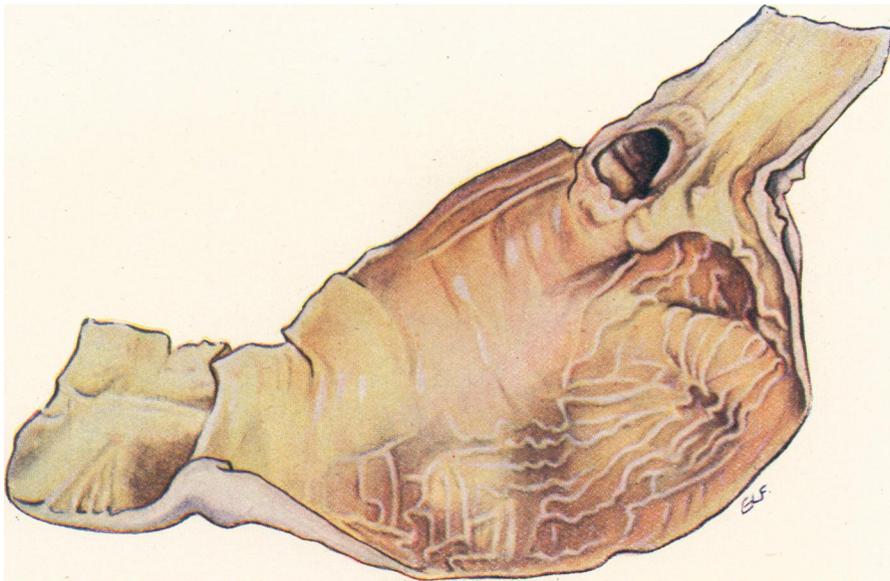


Fig. 1. Post-mortem appearance in Case 1.

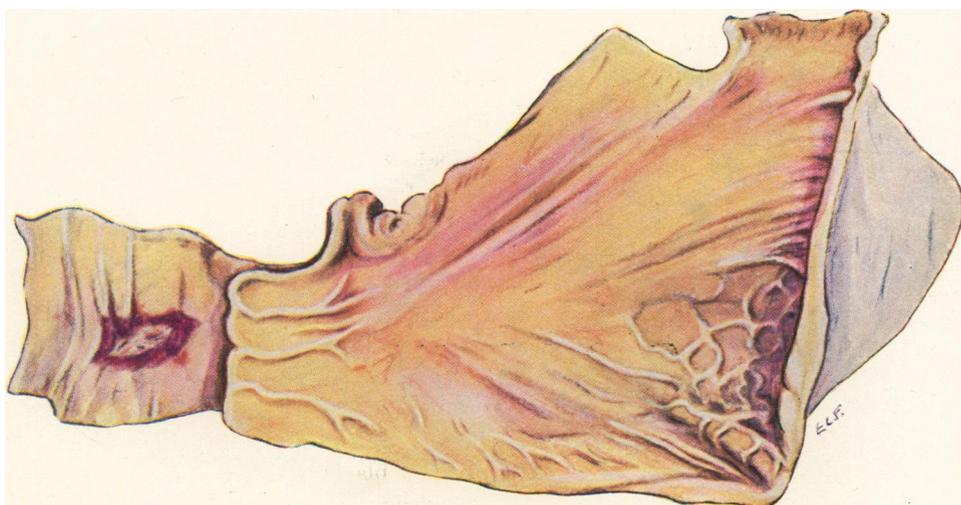


Fig. 2. Post-mortem appearance in Case 2.

Billard considered these ulcers not uncommon and accounted for them by saying 'if there should occur ever so little disturbance in the general or pulmonary circulation the abdominal vessels become engorged, a passive hæmorrhage occurs.'

Landau⁴ published in 1879 a book on 'Melæna in the New-born' which is one of the great contributions to our knowledge of these ulcers. His conclusions are important :—

1. Almost all cases of uncomplicated melæna in the new-born depend on round ulcer of the stomach or duodenum.
2. They are due to injuries of some kind during birth, especially asphyxia.
3. Gastric and duodenal ulcers are commoner than is usually supposed ; as in adults, girls are more liable to be affected than boys.
4. Melæna without ulceration is due to the same causes, asphyxia, pressure, &c.

Silbermann⁵ in 1877 related two cases he had seen, and collected reports of 42 others. His conclusions are similar to Landau's :—

1. Melæna depends without any doubt on ulceration.
2. He agrees with Landau as to the causes, namely embolus, thrombosis and above all asphyxia.
3. Extravasations of blood take place during suspension of breathing and this explains cases where there is an ulcer but no embolus is found.

Silbermann finally mentions cases where melæna depends on such causes as disease of the liver and spleen, atelectasis of the lungs, high aortic pressure, hæmophilia and infections.

Kundrat⁶, writing in Widerhofer's article on 'Gastric and Intestinal Hæmorrhage' in Gerhardt's *Handbuch der Kinderkrankheiten* (Vienna, 1879), surveyed the whole subject. In the main his conclusions are identical with those of Landau and Silbermann, but he adds the remark that the group of cases of melæna neonatorum with ulcers in the stomach or duodenum are usually asphyxiated.

The English authors, Charles West⁷ and Eustace Smith⁸, were of substantially the same opinions.

Widerhofer⁹ thought that the prognosis in cases of melæna neonatorum was very grave. According to his researches 50 to 60 per cent. of all cases of melæna were fatal, and death was inevitable in all cases with ulcer.

The frequency of the occurrence of melæna in the new-born is given by three authors thus : Hecker found it in 8 cases in 4,000 births, Genrich 1 in 1,000,

and Moynihan¹³ 1 in 1,000, and the last named author adds, 'not all of these are due to ulcer.'

These observations would scarcely be of more than academic interest if gastric and duodenal ulcers in infancy were only discoverable on the post-mortem table, and if treatment were impossible or hopeless.

Diagnosis.

As regards the diagnosis of these ulcers, apparently they occur in marasmic infants either as the cause or as the result of the marasmus; therefore we might justifiably suspect ulcers more commonly in marasmic babies than we do at present.

Melæna in the new-born may be almost the only sign of ulcer, but Widerhofer sounded the warning that bleeding may be absent, as it was in the early stages of my case. In any event Widerhofer's advice is sound, that the quantity of hæmorrhage has no bearing on the diagnosis of ulcer. 'We have seen,' he wrote, 'the amount equally great in cases where there was no ulcer. On the other hand continuous bleeding (over 36 hours) increases the likelihood of ulcer.' Marasmus must not, of course, be expected in those cases where death occurs in the first few days of life. If the infants live longer they may show signs of pain associated with food. Vomiting seems usual either after pain or after diarrhœa. Armitage¹⁵, who states that melæna occurs in 40 per cent. of cases, noted that diarrhœa was reported in 50 per cent. of acute cases. Hæmatemesis may, or may not, occur: its absence indicates nothing.

Kundrat⁶ observed that just as in adults so in infants ulcer of the stomach may be acute or chronic. He attributed both forms to minute hæmorrhages. The difference between mere erosion and definite round ulcer is, he said, quantitative not qualitative.

During life the distinction between acute and chronic ulcer can scarcely be based on anything except the duration of symptoms.

Proctor¹¹ has collected all the accounts of chronic peptic ulcer in children that he could find in the literature. His list extends to 19 undoubted cases and 2 doubtful. The ages of 17 out of the 19 cases ranged from 5 to 14 years and are outside the scope of this paper. His two remaining cases seem clearly to fall within the category of peptic ulcers in infancy.

Alsberg¹² in 1920 published the case of a girl aged two years who had a sudden attack of pain and bleeding. Operation revealed the bowels to be full of blood and an old duodenal ulcer scar near the pylorus, with adhesions to the liver. The child recovered. Palmer's case referred to below was the second of the same sort.

Moynihan collected records of chronic duodenal ulcer in thirteen infants whose ages lay between six weeks and ten months. Veeder¹⁶ mentions five cases

ranging in age from one month to five months. In each of these cases marasmus and vomiting were prominent symptoms. Veeder concludes that when massive hæmorrhage from the bowel accompanies these symptoms the diagnosis of duodenal ulcer suggests itself strongly.

Treatment.

In the acute cases ordinary medical treatment may suffice for cure. We know that such a condition can heal from the account of Palmer's¹⁰ case where a boy six months of age was operated on who had had symptoms from birth. At the operation a scarred ulcer was found in the duodenum. This boy had first a pyloroplasty and later a gastro-enterostomy performed. At the age of two years he was reported to be normal.

Note by A.D.F.

The ætiology of peptic ulcers in infants is unknown. The histories of the published cases of hæmatemesis and melæna neonatorum suggest that interstitial hæmorrhage may be the primary factor in the causation of the ulcer, for in many cases the labour has been a difficult one and respiration has had to be stimulated. Support is gained for this view by the two cases reported. Case 1 was born after a prolonged labour and Schultze's method was used to start respiration. Case 2 demonstrates peptic digestion of an area of tissue devitalised by hæmorrhage—the hæmorrhage occurring during asphyxiation. Such hæmorrhages occurring in the new-born are likely to be extensive, since most infants for the first few days of life are potential bleeders. This, as Lucas¹⁴ has shown, is due to a temporary deficiency of prothrombin.

CONCLUSIONS.

The conclusions which may be drawn from these observations are :—

1. That peptic ulcers are commoner in infants than is commonly recognised.
2. That melæna neonatorum depends not infrequently upon ulcer of the stomach or duodenum.
3. That acute ulcers may heal spontaneously or as the result of medical treatment.
4. That the existence of chronic peptic ulcer may be suspected in marasmic infants who vomit frequently, who appear to suffer pain after food, who pass blood from the bowel, and, more rarely, who vomit blood.
5. That some cases of chronic peptic ulcer can be cured by surgical operation. I have particularly insisted that only "some cases" may be successfully operated upon because from the situation of the ulcer in Henoch's case and in my own (where the œsophagus was involved) there would seem to be small likelihood that any operation could have been performed with success.

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