5. The patient should be intubated immediately if the anaesthetist feels that convulsive symptoms are at all imminent.

I do not consider that atropine should be withheld, providing the other and more important points have received attention.

Active treatment should be as follows if a convulsion occurs despite precautions:

1. If an inhalational anaesthetic is being given it should be discontinued immediately and O₂ and CO₂ administered.

2. All coverings should be removed from the patient. The limbs should be sprayed with cold water (a stirrup pump is excellent for this purpose) and evaporation hastened by air currents from waved towels, oxygen cylinders, etc.

3. The table should be placed in a slight reverse Trendelenburg position.

4. If, as often happens, convulsions cease temporarily in a minute or so, the patient should be intubated if this has not already been done.

5. If convulsions have not ceased in this time a small intravenous dose of a barbiturate should be given. In practice this means that a nurse or student should prepare some pentothal or evipan on the first sign of a convulsion and that it should be given as soon as it is ready if the convulsions are still in evidence.

6. If the patient has not been intubated this must be done immediately the barbiturate has controlled the convulsions sufficiently to make it possible, and rhythmic insufflation with oxygen must be performed. *This is most important.* Barbiturates can and will save lives in ether convulsions, but they can also cause fatal respiratory paralysis. A case of ether convulsions which ends fatally usually does so with a cyanosed patient and a tonically contracted larynx. A barbiturate given shortly before this stage is reached—and it may occur within as little as a minute or two of the first symptom—may check the convulsion, but there is a danger that respiratory movements may never begin again unless pulmonary ventilation is artificially performed from the earliest possible moment.

7. If the stage of the operation demands further anaesthesia with relaxation, ether may be restarted or continuous barbiturate anaesthesia may be substituted. The ether is only one of the several contributing factors which go to initiate a convulsion, and, especially in unskilled hands, a change over to chloroform may well do more harm than good.

Differential Diagnosis of Ether Convulsions

Many writers have emphasized the difference between convulsions and ether clonus, a harmless though annoying complication which appears early and usually disappears as anaesthesia deepens. There is, however, another type of movement which I have seen on a number of occasions, but which is not mentioned in the literature—namely, regular rhythmical movements of one or more muscle groups, usually occurring early in the third stage and soon passing away, but occasionally persisting into deep anaesthesia. I have seen these movements affecting a single finger, a hand, a foot, a knee, and on one occasion the head. Movement occurs in relation to respiration, usually every third or fourth breath. None of the patients showing these movements was at all inconvenienced by them or was the least source of anxiety to me. No treatment was necessary. I mention them because on two occasions I have known house-surgeons see these movements affecting the eyebrows and mistake them for the irregular premonitory twitches which so often herald convulsions.

Summary and Conclusions

It is suggested that ether convulsions are caused by neurogenic stimuli in hyperpyrexial patients.

It is shown that hyperpyrexia will result from the administration of general anaesthesia to a dehydrated patient in a hot humid atmosphere.

Logical methods of preventive and active treatment are described.

REFERENCES

- Bailey, Hamilton (1940). *British Medical Journal*, 2, 222.
 Bull, L. J. F. (1927). *Ibid.*, 2, 471.
 Gibbs, F. A., Gibbs, E. L., and Lennox, W. G. (1939). *Arch. Neurol. Psychiat.* Chicago, 41, 1111.
 Hornabrook, R. W. (1927). *British Medical Journal*, 2, 471.
 Hudson, R. V. (1936). *Brit. J. Anaesth.*, 13, 148.
 Mackenzie, J. Ross (1931). *British Medical Journal*, 1, 440.
 Pinson, K. B. (1927). *Ibid.*, 1, 956.
 Scott, W. J. M., and Morton, J. J. (1931). *Arch. intern. Med.*, 48, 1065.
 Singleton, H. (1927). *British Medical Journal*, 2, 567.
 Sykes, W. S. (1930). *Ibid.*, 1, 1128.
 Walton, A. C. R. (1928). *Ibid.*, 2, 8.
 Watkins, K. H., and Wilson, S. R. (1927). *Brit. J. Anaesth.*, 4, 201.
 Wilson, S. R. (1927). *Lancet*, 1, 1117.
 Woolmer, R. F., and Taylor, S. (1936). *Ibid.*, 1, 1005.
 Wright, A. Dickson (1935). *British Medical Journal*, 1, 949.

ENCOPRESIS (INCONTINENCE OF FAECES) IN CHILDREN

BY

CHARLES BURNS, M.R.C.S., L.R.C.P., D.P.M.

Director, Child Guidance Clinic, Birmingham; Psychologist,
 Midland Nerve Hospital; Psychiatrist, E.M.S.

The term "encopresis" was suggested by Weissenberg (1926) for those cases of faecal incontinence in which no definite organic lesion is found. As a shortened description, and the counterpart of "enuresis," it is perhaps worthy of adoption. The condition has not had the attention it deserves compared, for example, with enuresis, and receives scant mention in textbooks of paediatrics.

Although encopresis is much less common than enuresis, it is certainly more distressing, and is often, too, a symptom of severe neurosis. The fact that the child will "grow out of it" is no reason for not hastening the process of cure, particularly at the present time, when the condition is fairly prominent among problems of evacuation. The complaint cannot be classified simply under one heading, for it varies from mere soiling, diurnal or nocturnal, to those cases in which there is not only incontinence but also playing with faeces—decorating the bed or the wall, or depositing the scybala in out-of-the-way places. An attempt is here made to describe some of the cases observed at a child guidance clinic and followed up long enough to see the outcome of treatment or of the lapse of time.

Cases of incontinence of faeces may be divided into: (1) simple soiling, (2) neurotic cases, and (3) cases associated with petit mal or vasovagal conditions. Partial soiling of bed or trousers must be distinguished from the passage of formed scybala either involuntarily or semi-voluntarily. The former may be due to sheer hastiness, carelessness, or lack of training. Again, it may be due to fear of asking to leave the room, fear of a dark lavatory or passage, or simple lack of enough leisure in a badly managed home. There is, of course, no sharp dividing line between these cases and those in which there is an element of neurosis.

Reports of Cases

The following case illustrates treatment by child guidance methods, chiefly play therapy, and also the environmental factors involved.

A girl aged 12½ was referred to the child guidance clinic from hospital, where she had been an in-patient under observation. The incontinence had started about three years previously and had occurred by day and by night. No physical abnormality was found. She was also stated to have tempers and to walk in her sleep. She was the eldest of three girls, and had shown intense jealousy of both her sisters. The father was given to drink, and has twice left home owing to rows with his mother-in-law.

The patient was a normal baby, though difficult to train. At the age of 6 she sustained slight concussion, and when 8 was

twice in hospital for "chorea" (the diagnosis is doubtful). Her intelligence is slightly below the average. She is pleasant, friendly, inclined to moodiness and temper, and normally sociable, but looks pale and tired. She made twenty-two attendances at the clinic during February to May, 1938. The incontinence stopped a few weeks after she started treatment, and she began to look cleaner and brighter. Her play showed a conflict of feelings of various kinds, such as inferiority and self-assertiveness; jealousy, together with the inhibition of natural aggression; and sex curiosity. She was able to understand through her play how the opposing sides of her personality were causing profound maladjustments towards both her family and herself.

As the home situation could not be altered and she was "out-growing her strength," it was decided to give her a year or so at a residential open-air school. Later on, after leaving school, she had a difficult period owing to conditions at home, but managed to survive it.

In this case incontinence was evidently a form of aggression against an intolerable home situation.

When prolonged into adolescence the condition is especially distressing to the patient, particularly in girls. The following case illustrates a probable association with suppressed sex curiosity and desire:

A girl aged 15 was referred for wandering and staying out at night; she was said to go out with soldiers and to spend nights in air-raid shelters. She suffered from faecal incontinence, which occurred only when she stayed out late in the evenings. She was the younger of two daughters, the elder one being the model girl. The parents were a mixture of hardness and sentimentality. With friendly interest at the clinic the incontinence stopped, and an attempt was made to get her away to suitable training.

The association of this symptom with sexual maladjustment or sexual "habits" is understandable as a regression to early sex development, and particularly the fantasy association between the process of birth and defaecation. This appeared to be vividly illustrated in the following case:

A girl aged 8 was referred to the child guidance clinic by the head teacher with the story that the child deposited her faeces in odd places, such as a corner of the school cloakroom, and, moreover, arranged scarves, bits of wool, etc., like a nest around them. The child, who lived alone with her mother, had recently discovered that a new baby was expected. The mother was in bed, and the girl was naturally having a difficult life. As something had to be done urgently, arrangements were made to get her away for a time. It was subsequently found that she had been unwanted; the mother was a very unreliable person, and the father worse. The complaint stopped as soon as the child got away from home into happy friendly surroundings, but she was described as a bit "queer" and not making friends easily. Unfortunately, owing to frequent changes of address, the case could not be followed up.

The association between the feelings of this child, unwanted (as later events proved) and expecting the advent of a rival, and the attempt which she made symbolically (as well as very realistically!) to give birth herself to something, which she treated as though it were a baby, appears fairly obvious.

The next case is one in which the condition, also associated with depositing faeces in curious places, yielded surprisingly quickly to removal from home for a short time.

This case was that of a boy aged 10 in whom the trouble had arisen only eighteen months previously. His incontinence was accompanied by various methods of disposing of the faeces—by plastering the walls, putting them in his pocket, etc. The situation at home was that he had a second stepmother, who was well-meaning but neurotic and disagreed with the father over the boy. There was a younger stepbrother (the son of the first stepmother), of whom the boy was jealous. He was of

average intelligence and had a good school report. The complaint ceased when he was boarded out on a farm. A few weeks later the parents took him home on some trivial excuse, but the trouble did not recur, and he was well when seen a year later.

Finally, here is a case illustrating an association of faecal incontinence with attacks of what may probably be described as pyknolepsy.

A boy aged 11 was referred from hospital in April, 1938, for enuresis and faecal incontinence. He was free from both while in hospital for two weeks. His father is normal; the mother has migraine. He was born after a gap of seven years, and has four older sisters and one younger brother. He had always had enuresis and was spoilt as a baby. He began soiling his trousers when he started school, and was smacked at first.

"Turns" which resembled petit mal began three years ago, and now occur frequently during the day. He is backward, and his intelligence is below the average. He is shunned or teased by other children. Soon after starting attendance at the clinic the enuresis stopped, and two months later the incontinence also stopped. His play showed much repressed aggression, and the world was to him a place full of danger. He remembered being tied down in his pram as a baby.

He relapsed, and spent some time at an open-air school, but did not sustain the previous improvement. No apparent reason was found for these relapses, and attempts to gain the further co-operation of the parents have failed.

Aetiology

Encopresis is primarily a psychogenic disorder. It is a physical symptom which appears, in response to certain psychological situations, in children who are in some way constitutionally predisposed to the particular response. Apart from the aetiological factors constantly found in the environment, proof of its psychogenic nature is furnished by the cessation of the complaint when psychological means such as reassurance, explanation, alteration of environment, etc., are applied. It is, generally speaking, a protest against an inimical and threatening environment: an unconscious reaction, both of aggression and of fear. The details of the mental mechanism and fantasies involved, though of great interest from the psycho-analytic point of view, are too complex for discussion here.

With regard to the physiology of the condition, it would seem as though the emotional tension operated by cutting out the voluntary control of the excretory mechanism and reducing it to a spinal reflex. It would be, in this sense, a hysteric mechanism of dissociation.

In all such psychosomatic symptoms it is obvious that, however predominant a part the psychological side may play, physical aspects and measures must not be neglected. Some cases of apparent incontinence, for example, are more in the nature of lenteric diarrhoea, while others may actually need treatment for constipation. It is a fact, however, that most cases are associated with normal evacuation.

Treatment

The treatment may be summarized as follows. Whereas full psychological treatment at a clinic may be desirable, it is often not obtainable; but all measures are in a sense psychological.

1. An inquiry by the doctor into the child's background, habits, etc., may reveal something which needs to be put right—e.g., the child may be worrying over school. The doctor who has an intimate knowledge of the family should score in this respect. Advice may be accompanied by medicine both for its actual effect (e.g., pulv. cretae) and as a vehicle for suggestion, if its properties are emphasized to the child and parent. Some of the cases, however, are actually constipated, and this must be carefully inquired into.

2. As regards psychological treatment, this will follow the usual lines of child guidance. Direct treatment aimed at removal of the symptom, by suggestion or other means, is, in my opinion, desirable in many cases, as it eases the situation considerably for both parent and child, and further treatment can be carried on for the neurosis as a whole. This will generally be in the nature of play therapy, depending on the technique employed. In adolescents, vocational guidance is usually necessary, as well as readjustment of their attitude to their problems. It must be pointed out, however, that prolonged treatment is not required in all cases. For many of them the symptom can be cured in two or three interviews or by simple environmental readjustment.

3. Very good results can be obtained in an institution provided it is of the right type. A residential open-air school has cured some of the cases first seen at the child guidance clinic. Others are cured at hostels for evacuated children. Everything, however, depends on the good relation between staff and children. At the school mentioned above remedial exercises to strengthen the abdominal and pelvic muscles were considered useful.

4. If simple measures fail a period of observation in hospital may be advisable, both to eliminate organic disorder and because it may effect a salutary break, and show the child and the parent that the habit can stop (just as asthmatic, epileptic, and other attacks often disappear while the child is in hospital).

Summary

An inquiry is made into the investigation and treatment of encopresis in children based on cases treated at the Birmingham Child Guidance Clinic over the past seven years.

No definite organic condition is found, and the cause is held to be psychogenic, the symptom being a regressive one.

Examples of cases and a summary of various lines of treatment are given.

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BIBLIOGRAPHY

- Denny-Brown, D. E., and Robertson, E. G. (1935). *Brain*, **58**, 256.
Kanner, L. (1935). *Child Psychiatry*.
Shirley, H. F. (1938). *J. Pediat.*, **12**, 367.

MACROCYTIC ANAEMIA FOLLOWING GASTRO-ENTEROSTOMY

BY

NEIL S. GORDON, M.B., Ch.B.

House-physician, Royal Infirmary, Edinburgh

AND

JÓZEF JAPA, Dr.Med.

Late Clinical Assistant at the University in Lwów

The following two cases seem to be of some clinical interest. Both men developed a macrocytic anaemia after gastro-enterostomy. The first had had an operation for duodenal ulcer eleven years ago, and now shows a hyperchromic macrocytic anaemia which coexists with the hyperacidity of the gastric juice. The second patient developed a severe hyperchromic anaemia with some features of pernicious anaemia after a gastro-enterostomy performed twenty-eight years ago. He recovered without incident after liver therapy. Owing to the long time since the operation it is impossible to state definitely in this latter case if the present anaemia arose in connexion with the previous operation or if it is a separate entity.

Case Reports

Case 1.—A miner aged 52. Eleven years ago he was operated on for duodenal ulcer, a posterior gastro-enterostomy being done. The fractional test meal before the operation showed hyperacidity. Since then he has had little trouble, only occasionally having slight attacks of pain; lately, however, the pain has been worse, and is accompanied by vomiting. On examination pallor of the skin, a slightly enlarged spleen, and tenderness in the epigastrium were found. A radiograph revealed a normally functioning gastro-enterostomy with some ulcer deformity in the duodenum; there was no ulcer crater. Fractional test meal: fasting juice volume 40 c.cm.

	Fasting	$\frac{1}{2}$	1	1½	2	2½	3 hrs.
Free HCl	35	10	40	45	35	25	25 N/10 NaOH
Total acidity	45	25	55	55	55	45	45 as % of HCl

Blood examination showed: red cells, 1,630,000 per c.mm.; haemoglobin, 40%; colour index, 1.25; macrocytosis; white cells, 10,000 per c.mm.—polymorphs 69%, eosinophils 4%, basophils 1%, lymphocytes 14%, monocytes 12%. Sternal puncture showed the bone marrow to be normal. Liver (pernaemon) was given with good result.

Case 2.—A railway constable aged 62 complained of weakness and breathlessness on exertion. In 1912 a posterior gastro-enterostomy was performed for duodenal ulcer. Examination showed pallor of the skin, slight glossitis, sluggish knee- and ankle-jerks, but no enlargement of the spleen and liver. The fractional test meal showed no free HCl, the total acidity not exceeding 10; the fasting juice volume was 50 c.cm. Blood examination: red cells, 1,500,000 per c.mm.; haemoglobin, 55%; colour index, 1.8; macrocytosis; white cells, 3,000 per c.mm.—polymorphs 49%, eosinophils 6%, lymphocytes 42%, monocytes 3%. Normoblasts 7 per one hundred white cells; reticulocytes 2 per thousand. The fragility of the red corpuscles against hypotonic NaCl. solution was normal—0.36 to 0.46%. Sternal puncture revealed an excessive number of large erythroblasts. Liver (pernaemon) was given, and three weeks later examination of the blood showed a great improvement.

Commentary

The development of a hypochromic anaemia following simple gastro-enterostomy for gastric ulcer has been noted by many authors. This type of anaemia was reported by Witts (1930) in four cases, by Cosin and Hurst (1930) in one case, by Davies (1931) in five women and one man, by Lublin (1936) in 23 cases, by Meulengracht (1932) in one case, and by Hartfall (1934) in six women.

There are also much rarer reports of hyperchromic anaemia, sometimes called "megalocytic" anaemia, developing after gastro-enterostomy. Davidson (1928) described an Addisonian anaemia developing twenty months after gastro-enterostomy; Conybeare reported such a case in 1922; Hurst (1934) collected seven cases; Lublin mentioned this type of anaemia in one case two years after operation; and Fairley and Kilner (1931) reported one case of megalocytic anaemia following gastro-jejuno-colic fistula. Lastly, Salus (1932) reported two cases of subacute combined degeneration of the cord, without anaemia, fifteen years after gastro-jejuno-colic fistula.

The period in which the cases developed anaemia varies considerably—from twenty months to twenty-eight years after the operation. For the most part the anaemia occurred in women. Vaughan (1932) and others have stated that the anaemia may coexist with hyperacidity as in Case 1 above. They found normal acidity or hyperacidity in a certain proportion of cases after gastric operation even if severe anaemia was present.

The diagnosis of pernicious anaemia in the above cases is based on the blood picture (megalocytosis, colour index,