He was admitted to hospital at 4.15 p.m., where he was found to be unconscious; his limbs were flaccid and all reflexes were absent. His pupils were contracted and unreactive. He was cyanosed. His pulse was good and the blood pressure was 140/90. There was a sweet smell in his breath which was thought to be due to trichlorethylene. He was given oxygen and admitted to a ward, where his stomach was washed out with water. Three and a half litres of stomach washings were retained. During the wash-out he vomited the whole time, but was prevented from inhaling the vomit by tipping. The wash-out was stopped as his breathing was becoming weaker. Eventually breathing stopped completely. An intratracheal tube was passed, and artificial respiration was carried out with Boyle's apparatus. His heart then stopped beating, but recommenced after an injection of nikethamide. Breathing began naturally after two injections of 12 mg. of picrotoxin, but the respiratory excursion remained very poor in spite of two further injections that day. His condition deteriorated during the night and his heart again stopped, but started spontaneously. Later his breathing stopped and picrotoxin had no further effect. Death occurred at 5.30 a.m. the following day—about fifteen hours after he had ingested the poison.

Necropsy was carried out on the same day. A distinct smell of tetrachlorethane was present at the lips. A fine froth was found in the mouth and issuing from between the lips. There was an intense cyanosis of the post-mortem livid stains.

The brain was oedematous and congested, and a number of small anoxic haemorrhages were scattered throughout the white matter. Both pleural cavities contained a small clear exudate. The air passages were filled with copious frothy oedema fluid, and the lower lobes of both lungs were virtually airless as a result of extreme congestion and oedema. There was a small clear pericardial effusion. Numerous anoxic petechial haemorrhages were present on the epicardial and endocardial surfaces of the heart, and were most noticeable on the interventricular septum. No natural disease of the cardiovascular system was found.

There was no corrosion of the mouth or throat. The lower end of the oesophagus was congested. The stomach contained 440 ml. of fluid, consisting of water, mucus, a little undigested food, and free tetrachlorethane. Pronounced congestion of the gastric mucosa was present, affecting principally the ridges of the rugae. There was no necrosis, and the gross appearances resembled nicotine poisoning. A small blood-tinged peritoneal exudate was present, and congestion of the duodenum and upper jejunum. The other organs were normal, as was the histology of the liver and kidneys.

Free tetrachlorethane was recovered from the alimentary tract as follows:—Stomach: total contents, 440 ml.; free tetrachlorethane, 23 ml. Duodenum: total contents, 115 ml.; free tetrachlorethane, 21.5 ml. Small intestine (jejunum and upper ileum): total contents, 550 ml.; free tetrachlorethane, 4 ml. There was no free tetrachlorethane in the 3,500 ml. of stomach washings retained by the hospital.

Discussion

Acute and chronic tetrachlorethane poisoning are two distinct entities. In the latter, tetrachlorethane acts on the liver, heart, kidneys, and haemopoietic system, differing from the other halogenated hydrocarbons only by its higher toxicity, death resulting from liver necrosis a few weeks after the onset of symptoms. In its acute form of poisoning tetrachlorethane behaves as a narcotic, death usually occurring some 10 to 20 hours after its ingestion. Consciousness, however, seems to be lost early. The interval between ingestion and death, and the appearances of the gastric mucosa, depend on the quantity taken and the presence or otherwise of food in the stomach. In Case 1 it would seem that death occurred with extreme rapidity after the

ingestion of a very large volume of tetrachlorethane taken on an empty stomach. In Case 2 a much smaller quantity of tetrachlorethane was taken immediately after a large meal, and, although consciousness appeared to have been rapidly lost, death did not occur for some 15 to 16 hours. Vigorous resuscitative measures undoubtedly prolonged life in this case. It is quite clear from Case 2 that, owing to the insolubility of tetrachlorethane in water and its very high specific gravity, it is unlikely to be satisfactorily evacuated from the stomach by the normal methods of lavage.

Summary

Two cases of acute fatal tetrachlorethane poisoning have been described. The differences between acute and chronic tetrachlorethane poisoning are discussed.

Ordinary methods of gastric lavage are unlikely to be satisfactory.

I wish to thank H.M. coroner, West Surrey, for permission to publish these two cases.

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ANAL FISTULA WITH EXTENSION TO THE THIGH

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A case of chronic ulcerative colitis is presented in which a fistula extended from the anal canal through the space between the sacro-spinous and the sacro-tuberosus ligaments and then along the obturator internus tendon to form an abscess in the thigh.

Case Report

A man now aged 37 first complained of diarrhoea and the passage of blood and mucus per rectum in 1938. In 1939, following a haemorrhoidectomy and excision of a fistula-in-ano, the diarrhoea increased in severity, and he also began to pass pus per rectum. In 1940 signs and symptoms of an anal stricture developed, and for its relief a caecostomy was performed. Later that year he also developed a vesico-colic fistula, and his weight fell to 6 stone (38.1 kg.). A transverse colostomy was then constructed and the caecostomy closed by operation. Since 1940 the transverse colostomy had acted many times a day; and during that time he had complained of pain in the region of the right hip.

On April 26, 1949, he was first seen by me at Sydney Hospital. He stated that he had had more severe pain over the right hip for the previous three months, and for six months had noticed a swelling over the right greater trochanter.

On examination his general condition was fairly satisfactory, his weight was 9 stone (57.2 kg.), and his height 5 ft. 7 in. (170 cm.). The abdomen was lax and not tender,

and no mass or viscus was palpable. There were operation scars in the right iliac fossa. The transverse colostomy in the epigastrium was retracted to the level of the surrounding skin, which was indurated.

A sigmoidoscope with an external diameter of 1 cm. passed easily into the proximal limb of the colostomy and revealed slightly reddened mucosa, but no blood, mucus, or pus was seen. The mucosa was not ulcerated and there was no constriction of this portion of the bowel. The same sigmoidoscope passed only 8 cm. down the distal loop of the colostomy. Further passage was prevented by a stricture with a lumen of only a few millimetres. The mucosa of this portion of the bowel was covered with blood, pus, and mucus, but no ulceration was present.

While air was being blown into this distal limb of the colostomy the patient complained of pain and a feeling of bubbling in the region of the right greater trochanter.

The right greater trochanteric region was slightly tender and swollen, but was not red or hot. After sigmoidoscopic examination of the distal loop of the colostomy, crepitus was easily elicited over this trochanter. The anus and the perianal tissues were scarred and tender (Fig. 1). Six centimetres from the anus the lumen was almost completely blocked by a stricture. Radiography of the hip showed an irregular erosion of the right greater trochanter.

FIG. 1.—A, Scarred anus and anal canal. B, Bladder. C 1, Caecostomy. C 2, Transverse colostomy. I, Ileum. P, Prostate. S 1 and S 2, Strictures. T, Abscess over right greater trochanter. V, Obliterated vesico-colic fistula.

Four months after this examination a purulent discharge appeared in the anus and was increased by pressure over the right greater trochanter. After another four months—that is, on December 13, 1949—the transverse colon to the left of the colostomy, the descending colon, most of the sigmoid colon, and their mesenteries were removed through a midline wound. The upper end of the remaining lower portion of the bowel was brought out above the pubis as with a first-stage Lahey resection of the rectum. Many adhesions were present in the pelvis at that time, and it was quite impossible to determine the extent of any intrapelvic infection. Normal haemorrhoids were present in the right side of the colon. Convalescence after this operation was uneventful except for sloughing of a portion of the bowel in the suprapubic wound. He was discharged home on January 4, 1950, with the wound healed and with a small suprapubic sinus communicating with the rectum.

In the next 12 weeks his general condition improved, and on March 28 a perineal excision of the rectum and the lower end of the sigmoid colon was performed. At this operation considerable scarring and fibrosis of the ischio-rectal fossae and the perirectal tissues were encountered. The fistulous track leading into the right ischio-rectal fossa was followed backwards into the space between the sacro-spinous and sacro-tuberous ligaments. From there it appeared to take the path shown in Fig. 2. The vesico-colic fistula appeared to be healed although the rectum was firmly adherent to the bladder. Two weeks after operation he was discharged home with the suprapubic fistula healed and with the

perineal wound healed except for the anterior half-inch (1.3 cm.). The latter discharged slightly and did not close for another four months. Since then there has been no further discharge from the perineum.

Within a few weeks of this operation the swelling, tenderness, and crepitus over the right greater trochanter gradually decreased. On only one occasion since then, and that 18 months afterwards, has he complained of any discomfort in the right thigh; and this vanished after a few days and has not reappeared.

When he was last examined on February 19, 1953, his general condition was excellent. The colostomy was acting only a couple of times a day. However, the mucosa of the right colon was redder than when first examined nearly three years previously, and the vascular pattern was no longer visible. No ulceration of the mucosa or stenosis of the lumen of the bowel was present, and its lumen did not contain any blood, pus, or excess of mucus.

FIG. 2.—The abscess over the greater trochanter appeared to be subcutaneous, but this area was not explored, and it is more likely that it was situated beneath the deep fascia.

Discussion

Spread of an anal fistula beyond the perineal region is most uncommon unless it is complicated by or is due to a more serious lesion—for example, carcinoma of the rectum or chronic ulcerative colitis; and in this case the latter was the cause. Normally, the whole of the tracks of a fistula-in-ano should be laid open and the wound “de-roofed” and “saucerized.” In this case such was not possible, but excision of the cause of the fistula, the infected bowel, together with the internal opening, would appear to have resulted in its cure. Drainage of the abscess in the thigh by a local incision was contraindicated prior to the resection of the rectum and anal canal, and since then it has no longer been troublesome.

When this patient first came under my care there was already a transverse colostomy, and the disease was apparently limited to the left side of the colon and rectum. It was accepted then that eventually he would probably need a total colectomy and an ileostomy. Yet, altogether, he has had nine years with the colostomy, and there is no evidence that his progress during that time would have been improved by an ileostomy. Until an ileostomy finally becomes necessary, as it probably will, he will have had many years of extra comfort.

The most important lesson to be learnt from this case is an old one—that is, the wisdom of avoiding minor rectal operations (haemorrhoidectomy, fistulectomy, etc.) in the presence of chronic ulcerative colitis.

Concluding a favourable review of the B.M.A.'s *Refresher Course for General Practitioners*, Dr. André Plichet, Editor of *La Presse Médicale*, writes in the February 28 issue: “The book is easy to read, because the authors have taken the trouble . . . to convert the outmoded English system of weights and measures into the metric equivalent.” Copies of the book may be obtained from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, price 25s.