As stated by Hunter and Wilson (1953) the pigmentation occurs early in childhood on the lips and buccal mucosa. It may also occur on the digits, though not in the cases here described. Patchy brown pigmentation was present in the umbilical region of Case 1. Papillomata may occur in the stomach, duodenum, small intestine, or colon, but the small intestine is most frequently involved. In Case 2 both small and large intestines were involved.

There would appear to be no connexion with congenital polyposis coli, as the finding of polyps in the small intestine has never been described in that condition, nor has buccal pigmentation.

Case 3 has, as yet, not required surgical intervention, but the association of marked pigmentation of the lips and mouth with frequent attacks of abdominal colic is strong presumptive evidence of the presence of intestinal polyps.

A diagnosis of intussusception can be made with confidence when there are symptoms of intestinal obstruction and when buccal pigmentation is present.

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A Case of Methyl Chloride Poisoning

Poisoning from methyl chloride is fortunately of rare occurrence despite the fact that, during recent years, there has been a great increase in the use of this substance as a refrigerant. It is, however, extremely dangerous, and, in order that the risks of exposure should be more widely known than they are, the following case is reported.

CASE REPORT

A foreman electrical engineer aged 52 was admitted to Victoria Hospital, Kirkcaldy, on August 7, 1950. The history was that from August 4 he had been engaged in repairing a faulty commercial refrigerator. On the 5th he experienced a feeling of nausea, and in the evening vomited on several occasions. Next day he felt light-headed and dizzy, and his gait was unsteady. He continued at work, however, but on returning home his wife became alarmed at his condition and called in his doctor. His son, who also worked on refrigerator maintenance, recognized the peculiar odour of methyl chloride from his breath.

When he was admitted to hospital his general appearance was that of a drunken man. He was drowsy, his speech was thick and slurred, his gait unsteady, and pulse 100 but regular in time and force. There was slight cyanosis and his blood pressure was 160/104. Mentally he was confused and unable to give a detailed account of himself. Physical examination revealed no abnormality. Laboratory findings: Urine, S.G. 1005; definite acetoneuria; no sugar or albumin. Blood: Hb, 88%; plasma protein 7 g.% (albumin 4.20 g., globulin 2.80 g.); blood urea, 50 mg.

Copious dextrose drinks and sodium bicarbonate, 30 gr. (2 g.), were given four-hourly. There was no further vomiting, and his general condition improved greatly during the next two days.

On August 10, however, he became confused and irrational, and the next day he was vividly hallucinated both aurally and visually, and expressed persecutory ideas. He stated that voices were shouting at him from the ceiling and walls, accusing him of being a spy, that microphones were picking up his thoughts and broadcasting them by means of transmitters in the roof. He accused the nurses and doctors of giving him injections in order to control his

thoughts and interfere with his genitals. He stated that policemen were staring at him through the windows and discussing how to dispose of him. He was extremely agitated and excited, and adopted a threatening attitude towards the nursing staff and refused to co-operate in his treatment. Arrangements were therefore made for admittance to Stratheden Mental Hospital, Cupar, Fife, and while being transferred by ambulance he made a vicious and unprovoked assault on a male escort. At the time of admission he was so aggressive and truculent that a physical examination was impossible, and, following the administration of 10 ml. of paraldehyde by intramuscular injection, he settled down and slept soundly until the next morning.

On awakening he was quite rational and was able to give a lucid account of himself. Although his memory for the preceding two days was rather hazy he realized he had given much trouble and was most apologetic. His persecutory ideas had now completely gone, and, although he remained hallucinated aurally, he realized that the voices were imaginary. He complained of double vision and admitted having had difficulty in focusing for several days. He stated that while working in the refrigerator he was repairing he realized he was inhaling methyl chloride fumes, but liked the peculiar odour of this substance and therefore did not take the precaution of wearing a mask which was available. The space in which he was working measured approximately 8 by 5 ft. (2.4 by 1.5 metres), had no ventilation, and, so far as he was aware, a high concentration of methyl chloride was present. Physical examination revealed no abnormality and his urinary output was satisfactory. Laboratory investigation showed a marked acetoneuria but no albumin or sugar; Hb, 85%; red cells, 4,250,000; white cells, 14,000, with a normal differential count. His previous treatment was continued and progress thereafter was uninterrupted. He was discharged from hospital on August 24.

DISCUSSION

Methyl chloride (CH_3Cl) is a colourless gas, but is used as a refrigerant in liquid form. It has a weak but not unpleasant odour, is only faintly irritant, and does not injure the cornea. It is slightly narcotic, but the general toxic action is severe. There are, however, delayed toxic effects which may occur after apparent recovery. Absorption is rapid, but elimination is slow, and it is considered that concentrations of 100 parts per 1,000,000 are extremely dangerous (Jacobs, 1949). Most cases of poisoning due to this substance have occurred in America, where, in all, 50 cases have been reported. Roth described 10 cases in Switzerland in 1923, and Schwarz recorded 9 cases in Germany in 1926. In Britain seven cases have been reported (Lehmann and Flury, 1943).

The toxic symptoms of methyl chloride are dizziness, restlessness, drunkenness, apathy, anorexia, nausea, vomiting, diplopia, tremors, unsteady gait, psychic disturbances, and convulsions. Delayed symptoms and even death can occur two to three weeks after apparent recovery. It is also stated that death can occur without previous symptoms of poisoning. The delayed toxic action is most likely due to a breakdown product of the methyl chloride molecule in the form of phosgene, formaldehyde, or formic acid.

The post-mortem findings which have been reported include cerebral oedema and minute haemorrhages in the brain, lungs, liver, kidneys, and heart. Degenerative changes are often found in the liver and kidneys (McNally, 1937).

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