

Ethyl Chloride, Nitrous Oxide, and Oxygen Mixture

Q.—I give a number of dental anaesthetics, chiefly to children, using a McKesson apparatus with vinyl ether in addition to nitrous oxide and oxygen for prolonged anaesthesia. I would prefer, however, to give ethyl chloride in the nitrous oxide and oxygen mixture, as in many ways this is safer and better than vinyl ether or trichlorethylene. Is there any apparatus which can be incorporated with a McKesson for delivering ethyl chloride by drip or by controlled addition to the mixture? Is there any objection to the idea of a nitrous oxide-oxygen mixture with ethyl chloride in an open circuit?

A.—Ethyl chloride as a supplement to nitrous oxide and oxygen has been in use for a very long time. Within the last fifteen years serious interest in this combination has been revived.¹⁻⁴ There is no commercially available vaporizer for ethyl chloride for the McKesson apparatus, nor is there one for such British equipment as the Boyle or Walton. However, all that is necessary is a small hole in the circuit somewhere between apparatus and patient into which ethyl chloride can be squirted. A drip vaporizer would need special precautions in its design owing to the low boiling-point of ethyl chloride.

There is no objection to ethyl chloride being used in an "open" circuit. Ethyl chloride is widely used, its main danger being overdose. Many anaesthetists, however, particularly in the United States, would not agree with the questioner that ethyl chloride "is safer and better than vinyl ether or trichlorethylene."

REFERENCES

- Lincoln, C. W., *Anaesthesia and Analgesia*, 1941, 20, 328.
- Westell, U. M., *Lancet*, 1941, 2, 666.
- Bromage, P. R., *Anaesthesia*, 1950, 5, 94.
- Minnitt, R. J., and Gillies, J., *Textbook of Anaesthetics*, 7th ed., 1948. Livingstone, Edinburgh.

Hot-air Sterilization

Q.—What are the uses of hot-air sterilization?

A.—Hot-air sterilization is the best method for sterilizing dry glassware of all kinds. It is particularly useful for all-glass syringes and for certain makes of glass syringes with metal nozzles which are guaranteed by the manufacturer to withstand dry heat at the required temperature. The method is applicable also to hypodermic and intravenous needles, suture needles, forceps, scissors, scalpels, and scalpel blades, and to other surgical instruments. In order to destroy all bacterial spores it is usual to expose the clean dry instruments or glass for one hour at 160° C. (320° F.) in a hot-air oven. This method, however, is only recommended when direct contact of the material with moist steam is impractical. One important objection to the use of dry heat is the greater length of time required.

Petroleum jelly gauze may be sterilized in the hot-air oven at 160° C. for 2½ hours. Care must be taken to pack the gauze in a metal box, which should be no more than two-thirds full. Gauze, bandages, and cotton-wool are only slowly penetrated by dry heat, and these materials should be placed in the cold oven and the temperature raised slowly over a period of one hour to reach 160° C. in order to allow heat penetration; thereafter a further exposure of one hour at 160° is adequate for sterilization. There is, however, a risk of imperfect sterilization if the time of exposure is shortened or the temperature falls below 160° C. It is usual to find some discoloration and friability of cotton materials after this method.

Rubber materials such as gloves and catheters cannot be sterilized by this method without the risk of serious damage; gum catheters and many plastic materials also deteriorate. Some nylon syringes and other plastic materials can be sterilized satisfactorily by hot air, but it is wise before purchasing such instruments to ascertain from the makers whether they will in fact resist hot-air sterilization at 160° C.

REFERENCE

- Perkins, J. J., *Principles and Methods of Sterilization*, 1956. Thomas, Illinois.

Premature Closure of Epiphyses

Q.—(1) What criteria are necessary for a diagnosis of premature closure of the epiphyses in a child, and how soon may the diagnosis be made with confidence? (2) What are the commonest causes of the condition, and what is their treatment, if any, and prognosis? I have in mind a child of 13 years.

A.—Premature closure of the epiphyses can be recognized radiologically by a study of sample areas of epiphyses, which will vary according to the age of the child concerned. For example, fusion of the epiphyses in the iliac crest and ischium in a child of 13 years would clearly be abnormal, because normally the epiphyses should not be evident by this age. Other valuable sites would be the elbow and shoulder regions. It must be remembered that boys' epiphyses fuse later than girls', so the sex as well as the age of the child is important. Comparison with the x rays of a normal control of the same age and sex is always helpful.

The commonest causes of premature fusion are sexual precocity, which may be (and usually is) constitutional and presumably owing to premature activation of the pituitary from some unknown cause, the adrenogenital syndrome, and Albright's syndrome (polyostotic fibrous dysplasia). It has been suggested¹ also that repeated illnesses may so suppress cartilage growth that fusion occurs earlier and results in dwarfing.

Treatment will vary with the cause, but prognostically it can be said that if the epiphyses have fused there will certainly be no further growth. No treatment is necessary, or advisable, for constitutional sexual precocity.

REFERENCE

- Harris, H. A., *Bone Growth in Health and Disease*, 1933, p. 43. London.

NOTES AND COMMENTS

Streptomycin and Visual Disturbance.—Dr. G. F. WALKER (Peterborough) writes: I would like to refer to the problem mentioned in "Any Questions?" (December 7, 1957, p. 1382). Dr. R. E. Loder, who has long been especially interested in the clinical pharmacology of curare and allied substances, has just told me that he and other anaesthetists are aware that streptomycin has a curare-like effect. I asked him to see a patient of mine who had just completed a course of six weeks' streptomycin. He found that both her vision and her muscular power improved when 1.5 mg. of neostigmine was given intravenously, and the patient herself was very conscious of this improvement, too.

OUR EXPERT replies: I have no experience of streptomycin showing any curare-like properties and I have not been able to find any record of any such observations being made. Streptomycin in general has a neurotoxic effect, but it appears to select the sensory nerves rather than the motor ones.

Correction.—The sixteenth Annual Report of the Registrar-General, mentioned in the first footnote to the annotation on "International Classification of Diseases" (January 11, p. 94), was published in 1856, not 1956 as printed.

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