CONVULSIONS AFTER VINESTHENE ANAESTHESIA

BY

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Reports of convulsions occurring in connexion with vinesthene anaesthesia (divinyl ether) are rare. A few instances have been reported during the course of anaesthesia, but the recent paper by Massey Dawkins (1940) describing convulsive attacks in five patients differs from previous reports in that the convulsions came on after the anaesthesia was over. A further series of five cases has since been reported by Drs. Guerrier and Dafoe (1940). These are the only reports I can find of the occurrence of this phenomenon after anaesthesia. H. S. Ruth (1934) reported the occurrence of convulsions following laryngospasm and cyanosis during the course of anaesthesia with divinyl ether in one patient. The convulsions occurred while the patient was in about the middle of the third stage of anaesthesia, and ceased fairly quickly on the administration of oxygen. Massey Dawkins (1938, 1940) has also reported four cases occurring during the course of vinesthene anaesthesia which were clinically indistinguishable from ethyl ether convulsions. In two patients the convulsions ceased on administration of evipan sodium. The other two recovered after stopping the administration and raising the head. I have been unable to find any other references to this complication appearing either during or after vinesthene anaesthesia. The following detailed report may therefore be of interest.

Case Record

On October 12, 1939, I was attending a school dental clinic to anaesthetize children requiring dental extractions. A 3-c.cm. vinesthene ampoule was used in a Goldman's inhaler for each patient. The mask was applied to the child's face and retained there until automatic respirations supervened, when it was removed for the extractions. The subject of this report was a normally developed boy of 5 who required extraction of four temporary molars. He appeared in good health. The onset of anaesthesia was normal and quiet, but soon after loss of consciousness he developed a mild inspiratory laryngeal stridor which restricted his tidal exchange sufficiently to cause a slight degree of cyanosis. Stridor and cyanosis were both abolished within a few seconds of removing the mask for the start of the extractions. The subsequent course of anaesthesia was uneventful and the teeth were removed without difficulty. The child, however, did not recover in the usual way, but remained in a semiconscious state. He lay in the dental chair with both eyes fixed upwards and to one side, and did not respond to auditory stimuli or slapping. His colour, pulse, and respiration were normal. During the next ten minutes his condition remained about the same. Slight fibrillary twitchings around both eyes now developed. After these had continued two or three minutes he was laid on a couch. The twitching round the eyes rapidly became more intense and within five minutes he developed severe generalized convulsions. Cyanosis appeared rapidly, and was only partially checked by the administration of oxygen. No barbiturate was obtainable with which to control the convulsions. After the small oxygen supply was exhausted cyanosis at first became extreme. Subsequently his colour became ashen, his pulse became weaker, and he appeared in danger of death. The whole period of convulsions lasted twenty-five minutes, at the end of which the patient suddenly passed into a stertorous sleep disturbed by slight semi-convulsive movements of the body and limbs. His colour returned nearly to normal. After three-quarters of an hour

the movements had almost ceased. About fifteen minutes later he recovered consciousness. When seen by his family doctor about forty-five minutes later he was complaining of pain in his abdomen. Soon afterwards he passed two large motions within a short interval. Next morning he was quite well. He has remained so since.

The boy is the youngest of five children, all alive and well. A brother now 18 had had convulsions when between the ages of 2 and 5 at a period when he was stated to be very constipated. After the last convulsion when 5 years old he passed two ascarides lumbricoides. He has had no fits since. The subject of this report has always been healthy. He once had a "convulsion" after swallowing a large piece of orange when 3 years old. He also is very constipated, but has never passed any ascarides. The parents give no history of convulsions.

Comment

The sequence of events in this case appears to follow almost exactly that described by Massey Dawkins (1940) in his report of five cases of convulsions following vinesthene anaesthesia, and by Guerrier and Dafoe (1940) in five similar cases. It is difficult to give any satisfactory explanation of these phenomena. The condition is uncommon. This is the only case I have had in 500 administrations. Massey Dawkins gives the frequency as 1 in 442, and Guerrier and Dafoe as 1 in 1,096. It would be interesting to know (a) whether laryngospasm was present during the preceding anaesthesia, and (b) whether constipation is a usual concomitant. The appearance and course of the convulsions seemed to me to be remarkably similar to those I have witnessed under ethyl ether. The type occurring during prolonged vinesthene anaesthesia is also said to be clinically indistinguishable from deep ethyl ether convulsions. This raises the question as to whether the ethyl ether type and the two vinesthene types are not really different aspects of the same thing. It is notable that all the cases of convulsions after vinesthene have occurred following the very short period of anaesthesia necessary for dental extractions. When anaesthesia has been prolonged, convulsions have appeared during the course of the operation. If a common incident fires off the convulsions in each type the very short period of anaesthesia required for the extractions may be over before the appearance of the convulsions which have been initiated by some interplay of factors between the patient and the anaesthetic.

The sample of vinesthene was from one of a series of 3-c.cm. ampoules put up by the makers, Messrs. May and Baker, for use with a Goldman's inhaler. As it was completely used up during the administration it could not be tested for impurities, but the rest of the ampoules in the box were employed clinically without the appearance of any untoward symptoms.

I am indebted to Dr. T. L. Crawhall for details of the patient's subsequent progress, and for his past and family history.

REFERENCES

- Dawkins, C. J. Massey (1938). *British Medical Journal*, 1, 1236.
— (1940). *Ibid.*, 1, 163.
Guerrier, S. M., and Dafoe, C. S. (1940). *Ibid.*, 1, 366.
Ruth, H. S. (1934). *J. Amer. med. Ass.*, 102, 21.

According to the annual report for 1939 of the Council of the Pharmaceutical Society, presented at the annual meeting on May 15, the number of names of the pharmaceutical chemists and druggists on the register was 24,661 (an increase of 471). Of these 1,578 were registered as pharmaceutical chemists. The number of apprentices or students registered during the year was 651, and the number of registered premises was 15,381.