CURRENT COMMENT AND CASE REPORTS

CURRENT COMMENT is a section in Anesthesiology in which will appear invited and unsolicited professional and scientific correspondence, abbreviated reports of interesting cases, material of interest to anesthesiologists reprinted from varied sources, brief descriptions of apparatus and appliances, technical suggestions, and short citations of experiences with drugs and methods in anesthesiology. Contributions are urgently solicited. Editorial discretion is reserved in selecting and preparing those published. The author's name or initials will appear with all items included.

MEPHENESIN IN TETANUS

The use of mephenesin ("myanesin," British Drug Houses, Ltd.) has been reported for the treatment of tetanus by Belfrage (1) and Davison et al. (2). The following is the report of a case in which treatment with mephenesin and without sedatives was successful.

Case Report.—A boy, aged 13, was admitted to the Royal Victoria Infirmary, Newcastle upon Tyne, England, on July 10, 1949. There was a history of ten day-old lacerations of the right foot. On admission, neck stiffness had been present for two days and trismus for one day.

A diagnosis of tetanus was made, and he was given penicillin, 250,000 units every three hours, antitetanic serum 200,000 units, thereafter 100,000 units daily, and he received secnal, 1 1/2 grains at night for the first two days.

Generalised rigidity increased until, on July 12 (two days after admission), he had a marked risus sardonicus. Typical spasms appeared that afternoon; they were not very severe, but occurred about twelve times an hour. At 6:35 p.m. preparations for an intravenous infusion were made. An intravenous injection of decamethonium iodide, 1 mg., was given in the hope of controlling any spasms which the process of cutting down on the vein might initiate. Unfortunately, the injection itself caused a spasm, and a further 0.5 mg. was required to control this. This dose paralysed the muscles of respiration, and intermittent insufflation with oxygen was required for five minutes.

At 7:00 p.m. the intravenous infusion was begun, each pint of glucose-saline containing 70 cc. of mephenesin, 10 per cent, and penicillin 500,000 units. There was an immediate decrease in the frequency and severity of the spasms, many of which failed to waken the then sleeping patient. Some spasms were caused by attempting to cough up mucus in the trachea. Liquids were taken, the patient was washed, the bed was made and the patient even vomited on one occasion, but none of these events initiated a spasm.

The infusion was continued at the rate of one pint every four hours until the third day, and then only 2 pints were given until the early morning of the fourth day. Owing to an excess of mephenesin being added to the drip, precipitation occurred and the vein became blocked. A few minor spasms had occurred that evening, but it was not considered necessary to erect the infusion again until 11:00 a.m. the following morning, when more mephenesin was indicated by increase in trismus and neck rigidity. The drip was continued slowly until the morning of the seventh day. No objective spasm occurred after the fourth day, but subjective spasms consisting of pain in the back and neck were felt with decreasing frequency until the sixth day. The patient was able to take fluids from the time the drip was first erected and began to eat solids on the sixth day. Antitetanic serum, 100,000 units, was given into the drip daily.

The patient was allowed up on the eleventh day and discharged cured on the fifteenth day, the mephenesin being first reduced to 50 cc. per pint of glucose-saline and discontinued on the sixth day. By the
eleventh day, when drug therapy was discontinued, he had received: penicillin, 16,500,000 units, antitetanic serum 1,000,000 units, and mephenesin, 10 per cent, 910 cc. in 15 pints of glucose-saline solution. Owing to a report by Lowen (3) that heart block had occurred after mephenesin, an electrocardiogram was taken on the evening on the fourth day. This showed left axis deviation, but there were no other abnormalities and no lengthening of the P-R interval.

The urine became somewhat discoloured, but never gave positive guaiac or benzidine reactions.

**DISCUSSION**

Sedatives are often successful in controlling tetanic spasms, but have two great disadvantages: concomitant respiratory depression increases the liability to pulmonary complications, which are so often the cause of a fatal outcome in this disease, and the adequately sedated patient is incapable of doing anything for himself, cannot drink and has to be catheterized.

Unlike the other known muscle relaxants, mephenesin does not interfere with either respiration or voluntary movements.

In this case, tenacious mucus made expectoration difficult, but the patient was cooperative and could be encouraged to persevere with his efforts at coughing, and no signs of pulmonary involvement developed. He was enabled to take fluids throughout the illness, passed urine without difficulty and submitted to washing, bed-making and treatment of pressure areas on his back without spasms being initiated. After the first twenty-four hours of continuous mephenesin infusion, he was talkative and without anxiety, His morale remained high throughout the remainder of his illness.

The experience with decamethonium iodide on the second day, indicated that, if control of tetanic spasms be obtained with this drug, artificial respiration becomes necessary, and this is similar to the experience already reported (2) with d-tubocurarine chloride.

The addition of more than 70 cc. of mephenesin 10 per cent to one pint of glucose-saline solution causes precipitation; dosage is therefore limited by the number of pints of fluid which it is expedient to administer to the patient. Provided that renal function be maintained, there should be no objection to giving more than the 6 pints per day which were used in this case. As mephenesin is effective when taken by mouth, the possibility of oral administration in tetanus deserves to be explored.

The patient made some complaint of pain in the region of the saphenous vein. Phlebitis is caused by continuous infusion of long-standing, whatever the drug. In this case, in addition to mephenesin, antitetanic serum and penicillin were given by the same route, and both these are irritants. However, the phlebitis was not sufficiently severe to obstruct the infusion and did not prevent the patient from walking five days after the drip had been discontinued.

Investigation is being undertaken at this Institution concerning the development of "haemoglobinuria" after mephenesin. It seems likely that this does not occur and that the positive benzidine and guaiac tests which the urine gives are caused by degradation products of the drug. Renal impairment probably does not occur.

**SUMMARY**

A case of tetanus successfully treated with continuous mephenesin ("myanesin," British Drug House, Ltd.) infusion and without sedatives is reported. There was no "haemoglobinuria" and no cardiac arrhythmia. Pulmonary complications were absent.

The absence of respiratory depression with mephenesin compared with other muscle relaxants is stressed, and the advantages of cooperative, unsedated patient are mentioned.

Mephenesin appears to be the drug of choice in the treatment of tetanus, and the possibility of oral administration in this disease should be explored.

**REFERENCES**


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