METHOD FOR THE ADMINISTRATION OF MUSCLE RELAXANT DRUGS

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9 Claims. (Cl. 128—214)

This invention relates to the administration of muscle relaxants for the purpose of producing a state of muscle relaxation during surgical operations.

More particularly the invention is concerned with a device which provides for the automatic release and control of the supply of muscle relaxing agents to a patient and in which agents are needed or required to produce a desired degree of muscle relaxation.

In the use of relaxant drugs in anaesthesiology, there has been a tendency to overdose due to the use of respiratory arrest as indicating the degree of relaxation. The ordinary methods of administration merely indicate a state of deep relaxation, and do not afford a wide range of safety in a patient with unassisted respiration.

The present invention is based on the fact that a short lasting myoneural blocking agent which is rapidly destroyed in the body and which has no marked cumulative action makes possible a remarkably precise control of the degree of relaxation by regulating the amount of drug administered either by continuous infusion or by intermittent dosage. Basically, the method utilizes a means for administering a relaxant drug in combination with a means for regulating the administration of the drug by using the patient's own muscles to control the dosage rate when subjected to an electrical stimulus. Muscle relaxants as used in surgery, for example, function to paralyze the nerve systems which motivate and control muscle reactions. According to the present invention, the state of relaxation in a patient may be accurately controlled automatically and overdosing prevented through an electrical stimulus which has no substantial effect where an advanced state of paralysis is present. When insufficient relaxant is present in the system to have an effective myoneural blocking action, the electric stimulus applied at a selected motor point according to the present invention will produce a muscular contraction at the point of application which through suitable mechanism applied to a finger or foot of the patient, for example, can be made to release additional relaxant solution as needed to accomplish a uniform state of relaxation.

The invention will be described with respect to succinylcholine chloride commercially sold under the name "Anectine" by the Burroughs Wellcome & Co. (U.S.A.) Inc. It is capable of functioning with any muscle relaxant preparations.

Accordingly, the invention comprises a method and apparatus for administering muscle relaxant drugs which comprises the steps of periodically applying a low amperage electrical stimulus to a muscle motor point of the patient in applying the contractive force of the stimulus when unobstructed by a myoneural block to control the administration of additional relaxant into the patient.

In its simplest form, dosage is given intravenously by the customary gravity flow system although other pumping or pressure flow systems could likewise be used.

The drawings illustrate the application of the invention diagrammatically.
3. A method for the parenteral administration of muscle relaxant drugs, which comprises administering a muscle relaxant drug to produce a condition of myoneural block in the subject, applying a low amperage electrical stimulus to the motor point of a muscle controlling a toe normally movable by said muscle, and employing the contractive force of the muscle and resulting movement of the toe when unimpaired by myoneural block to control the admission of additional muscle relaxant drug into the patient.

4. A method for the parenteral administration of muscle relaxant drugs, which comprises administering a muscle relaxant drug to produce a condition of myoneural block in the subject, applying a low amperage electrical stimulus to the motor point of a muscle controlling a toe normally movable by said muscle, and employing the contractive force of the muscle and resulting movement of the toe when unimpaired by myoneural block to control the admission of additional muscle relaxant drug into the patient.

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