In summary, our case report suggests that pretreatment with oral dantrolene may prolong the duration of muscle paralysis caused by vecuronium.

The authors thank Rien P. Verburg, M.D., de Weever Hospital Heerlen, The Netherlands, for performing the in vitro caffeine-halothane provocation test.

REFERENCES


Diagnostic Application of an Axillary Block in an Infant

CARL LYNCH III, M.D., PH.D.,* AND ROGER A. JOHNS, M.D.†

Although anesthesia of the upper extremity by means of a brachial plexus regional block is well described in pediatrics,1,2 its use in infants and children for surgical procedures frequently is restricted. We report the use of the axillary approach to blocking the brachial plexus to provide excellent conditions for electromyographic (EMG) study of the upper extremity in an infant who was suspected of having an infantile form of myasthenia gravis.

REPORT OF A CASE

The patient, an 18-month-old male infant (weight: 12.2 kg), was hospitalized since birth for multiple problems following an apparent episode of perinatal asphyxia and meconium aspiration. He was a 3,015-g product of a 37-week gestation in a 20-year-old woman with no history or clinical signs of myasthenia gravis. Labor was complicated by variable and late decelerations. Immediately after delivery, his trachea was intubated, and meconium suctioned from below the vocal cords, with immediate extubation. Apgar scores were 3 at 1

* Assistant Professor of Anesthesiology.
† Resident in Anesthesiology.

Received from the Department of Anesthesiology, Box 238, University of Virginia Medical Center, Charlottesville, Virginia 22908. Accepted for publication October 3, 1984.

Address reprint requests to Dr. Lynch.

Key words: Anesthesia: pediatrics. Anesthetic techniques: regional; brachial plexus. Myasthenia gravis.
anesthesia would provide adequate conditions, anesthetic levels of all iv and volatile general anesthetics interfere with the neuromuscular junction by altering the kinetics of the acetylcholine activated ion channel.\(^5\) Although sedating doses could be employed, anesthetic doses of these drugs could complicate conclusions of EMG studies by altering neuromuscular transmission. The axillary block provides an effective means of anesthetizing the upper extremity so that the EMG study can be performed. Local anesthetics have been shown to enhance the effect of neuromuscular blocking agents; however, they have not had any effect on twitch tension in and of themselves.\(^6,7\) The serum levels expected in this infant (2–3 \(\mu g\cdot ml\(^{-1}\)) for an axillary block with the dose employed (7 \(mg\cdot kg\(^{-1}\)) are 10–20% of the levels employed to demonstrate synergism with neuromuscular blockers. These levels are far less likely to interfere with neuromuscular function than general anesthetics at clinical levels.

The myasthenic syndromes in infancy show variable clinical expression. Transitory neonatal myasthenia represents that syndrome of myasthenia in infants who were born to a myasthenic mother. Treatment with anticholinesterase drugs usually provides sufficient treatment until the circulating globulin that binds the acetylcholine receptor protein disappears from the infant’s circulation. Juvenile myasthenia represents that form of the syndrome in which children develop acetylcholine antibody to acetylcholine receptor protein, and onset in the majority of cases is after the age of 10 years, with no evidence of disease seen during the first year of life.\(^9\) Congenital myasthenia and familial infantile myasthenia represent two syndromes that may be apparent at birth and constitute intrinsic diseases of the myoneural junction. One congenital form is associated with end-plate acetylcholinesterase deficiency and is refractory to anticholinesterase drugs.\(^9,10\) Other congenital myasthenic syndromes have been demonstrated to be due to a defect in the acetylcholine receptor channel or a defect of acetylcholine resynthesis or mobilization and may show partial improvement with anticholinesterase therapy.\(^10\) Exact identification of the specific nature of the end-plate defect requires microelectrophysiologic and cytochemical investigation of neuromuscular junctions of affected muscle. Such studies were not performed in this infant.

In summary, brachial plexus block provides a suitable and quiet electrophysiologic field in which to perform electromyographic studies in infants or patients otherwise unable to cooperate. Regional anesthesia reduces interference due to the effects of general anesthetic drugs on the neuromuscular junction.
A Comparison of Two Automated Indirect Arterial Blood Pressure Meters: With Recordings from a Radial Arterial Catheter in Anesthetized Surgical Patients

E. Nystrom, M.D., K. H. Reid, Ph.D.,† R. Bennett, M.D.,‡ L. Couture, B.S.,§ H. L. Edmonds, Jr., Ph.D.¶

Most clinical measurements of arterial blood pressure are made by sphygmomanometry. Recently, automated sphygmomanometric blood pressure meters have been developed as substitutes for the manual sphygmomanometer. We evaluated two such devices: the Dinamap 845®** and the Infrasonde 4000®.†† Both devices automatically inflate a cuff to above systolic arterial pressure and determine arterial pressure by incremental deflations of the cuff. They differ in the physical measure used: the Dinamap 845® analyses pressure fluctuations sensed by the occluding cuff, while the Infrasonde 4000® uses a microphone to detect infrasound (20–30 Hz) waves associated with motion of the arterial wall.§§ Both devices display heart rate, and systolic, diastolic, and mean blood pressures.

MATERIALS AND METHODS

Forty male patients, who required arterial cannulation for medical reasons, participated in this study. All patients meeting this criterion, and given general anesthesia in the supine position, were included in succession until the study was complete. The experimental protocol was reviewed and approved by the Veterans Administration Research and Development (Human Studies) Committee. We compared the Dinamap 845® (N = 20) and the Infrasonde 4000® (N = 20) with a common direct measure, obtained from a radial artery catheter.

For the direct measurements, a radial artery was cannulated with a Criticon Catholon-IV® 20 G 1-1/4 catheter. A Gould/Statham® P23 pressure transducer was connected to the patient via a Sorensen Research® monitoring kit, which contained pressure tubing, an Intra-Ro® automatic flushing device, and a stopcock. The total length of tubing in the system was 161 cm.

Direct arterial pressure measurements may be seriously...